1974

A Predictive Model for Manpower Allocation in a Solid Waste System

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A PREDICTIVE MODEL FOR MANPOWER ALLOCATION IN A SOLID WASTE SYSTEM

BY

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B.S., Florida Technological University, 1971

RESEARCH REPORT

Submitted in partial fulfillment of the requirements
for the degree of Master of Science
in the Graduate Studies Program of
Florida Technological University

Orlando, Florida
1974

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INTRODUCTION AND PURPOSE

Solid waste management problems plague more municipal and county administrative officials nationwide than any of the 27 other major urban problems according to the National League of Cities survey of 1,031 elected officials throughout the country (Bancroft, April 1974, pp. 14-24). A growing concern is whether collector manpower requirements can be effectively controlled to compensate for higher pay while maintaining a high level of service.

Although the per service cost of refuse collection does not appear excessively high, magnitude of service required quickly expands the total cost to a high figure. Collection and disposal of an estimated 200 million tons of urban refuse produced in the United States in 1972 cost approximately 3 billion dollars (<u>Solid Wastes Management</u>, August 1973, p. 30). Furthermore, not only is the total population and industry of the country expected to increase, but per capita quantity of solid waste is expected to more than double by 1990. Improvement in collection efficiency can thus be expected to be instrumental in the saving of many millions of dollars.

In recent years, multitudinous studies have been devoted to improve refuse disposal techniques and the development of new disposal methods which incorporate refuse reclamation. However, a diminutive effort has been expended to comprehend and improve solid waste collection techniques. In short, large funds have been disbursed to finance research directed towards reduction of disposal cost, while the possible savings from reductions in collection costs have been neglected.

Since most of the population growth will probably be in the urbanized areas, it is plausible to assume a constant acceleration in the area concentration of solid waste. In other words, it will become increasingly necessary to think of managing refuse in terms of mass production, mass collection, and mass disposal. Based on growth patterns found in the larger municipalities, all jurisdictions should have access to as much factual information as possible in order to enable intelligent decisions and prevent costly errors.

The purpose of this research is to develop a statistical model that can be used to improve efficiency and productivity of solid waste collection systems. The measure of productivity will be developed in terms of man minutes per home and man minutes per ton; the measure of efficiency will be developed in terms of cost per service per week and cost per ton. As a planning tool, this model will provide the necessary data needed to gauge a "fair" day's work for each crew.

I. BACKGROUND

In 1972 the Office of Solid Waste Management Programs (OSWMP) contracted ACT Systems, Incorporated of Winter Park, Florida to conduct a comprehensive evaluation of 11 specifically defined residential collection systems. The study was to provide information and the apparatus to improve the evaluation and design techniques for residential collection systems throughout the United States. The results of the study would permit OSWMP to assess residential collection systems and to design more efficient and refined systems.

The collection systems selected for the study were described by differences in type of equipment, crew size, frequency of collection, point of storage, collection methodology and incentive system. The systems were defined as such to determine the relative significance of the variables listed and to assure the study result would have the broadest possible application.

After a system had been selected, the four routes that appeared to be serviced by most efficient crews were designated for the study. Only four routes were selected because of the necessity to limit the amount of data entering the system. These crews were selected by the system's solid waste manager based on knowledge and experience concerning each crew. Most efficient crews were selected to provide standards of performance by which similar systems could be evaluated. Each route's operation was described by daily collection information forms, Figure 1, which contain the following information:

Route Number

Date

Day of Week

Crew Size

Vehicle Number

Size (Cubic Yards)

Fuel Used (Gallons)

Engine Oil Used (Quarts)

Number of Homes Served

To the Route Time and Miles

Collection Time and Miles

Transport Time and Miles

Weight Collected

Discharge Point

Lunch Time

Breakdown Time

Completed forms were gathered for each route for a period of one year. This information was then used to develop a mathematical model from which productivity and efficiency

DAILY COLLECTION ROUTE INFORMATION

ROUTE__________ DATE__________ DAY__________ CREW SIZE__________

VEHICLE NO.______ SIZE(CU.YD.)______ FUEL(GAL)______ ENG.OIL(QT)______

NO. HOMES SERVED______	TIME	MILES	WEIGHT	DISCHARGE POINT *
LEAVE MOTOR POOL				
START COLLECTION				
LEAVE ROUTE				
AT DISCHARGE POINT				
ARRIVE BACK ON ROUTE				
LEAVE ROUTE				
AT DISCHARGE POINT				
ARRIVE BACK ON ROUTE				
LEAVE ROUTE				
AT DISCHARGE POINT				
ARRIVE BACK ON ROUTE				
LEAVE ROUTE				
AT DISCHARGE POINT				
ARRIVE BACK ON ROUTE				
LEAVE ROUTE				
AT DISCHARGE POINT				
ARRIVE AT MOTOR POOL				

LUNCH - START - FINISH			BREAKDOWN - PROBLEM (Circle Number) 1 Brakes, wheels, tires 2 Cooling or exhaust sys 3 Electrical sys 4 Fuel sys 5 Packer 6 Power or steering sys 7 Other
BREAKDOWN - START - FINISH			

* ENTER NUMBER
1=INCINERATOR
2=LANDFILL
3=TRANSFER STATION

REMARKS:

DATA VERIFIED BY:__________

FIGURE 1: Daily Collection Route Information Form.

TABLE 1

DEFINITION OF SELECTED COLLECTION SYSTEMS

COLLECTION SYSTEM	TYPE OF EQUIPMENT	CREW SIZE	FREQUENCY OF COLLECTION
1	Side Loader	1	1
2	Side Loader	1	1
3	Side Loader	1	2
4	Rear Loader	3	1
5	Rear Loader	3	1
6	Rear Loader	3	2

COLLECTION SYSTEM	POINT OF STORAGE	COLLECTION METHODOLOGY	INCENTIVE SYSTEM	UNION
1	Curb/Alley	One Side	Task	No
2	Curb/Alley	One Side	8 Hr. Day	No
3	Curb/Alley	One Side	Task	Yes
4	Curb/Alley	Both Sides	Task	Yes
5	Curb/Alley	Both Sides	8 Hr. Day	Yes
6	Curb/Alley	Both Sides	Task	Yes

measures could be determined and used to selectively compare and analyze operational differences among the routes.

Since the amount of data gathered by the above study was multitudinous, only six systems are utilized in this research. The system configuration of each is listed in Table 1.

II. ANALYSIS OF A SOLID WASTE COLLECTION SYSTEM

The manager of a solid waste collection system is concerned with answering a set of questions about the system so that he will have a better understanding of it. This understanding will in turn result in improved decision making. The sort of questions he might ask are similar to the following (Marks, 1970):

1. What are the goals of the system? What frequency of collection and type of service should be offered by the system? How will changing the service affect the cost?
2. What types of vehicles should be used and how many?
3. How many personnel are needed, and what should their duties and work rules be?
4. What route should be assigned to each vehicle? How should the city be divided into administrative subgroups?
5. Are there parameters of the system to which system costs and variables are particularly sensitive?
6. If there is additional money available for research, into what aspect of the system should further study be encouraged?
7. Should there be intermediate transfer stations for the deployment of wastes to more specialized transport vehicles?

Where should they be located, and what type of equipment should they contain?

8. What type of transport vehicle would be used in transfer from a transfer station to final disposal?

9. What type of disposal alternatives should be chosen, and where should it be located?

10. What would be the effect on the system of new technology in in-house waste reduction? In new disposal technology?

11. How will the stochastic nature of waste generation affect the analysis? How will the solution change as the area to be served continues to grow and spread?

12. What are the effects of political, social, and economic constraints? How much should be spent on aesthetic factors? Is regional grouping a feasible alternative?

To answer all these questions, the manager would have to build a model that would describe the collection process in its smallest detail and yet have the flexibility such that all of the innumerable parameters that could possibly affect the solution could be introduced in various configurations. However, the magnitude of such a model, which could consider the system in its entirety and encompass every possible detail, makes it impractical. For this reason, simplifying assumptions must be made in model development which reduce the detail mentioned but do not compromise the operational description of the process. By neglecting the problems of routing the individual vehicles through their tasks, the problem remains of how the refuse should be moved through the system. This, in other words, would be a flow of materials problem. Figure 2 shows a flow diagram of a simplified solid waste collection system. A description of one route traveling through the system is described below.

A refuse collection route was defined as the total activities of a collection vehicle and its crew for a period of one day. On a daily basis the activities begin with the departure of the vehicle and its crew from the motor pool in the morning and terminate with the arrival back at the motor pool at the end of the day. The route activities, therefore, encompass the specific operations of going to the area in which collections will be made, collecting the solid waste from the residences, transporting the collected waste to a disposal point, and returning to the motor pool. Special collections of items not normally handled by the collection vehicle such as tree trunks, refrigerators, stoves, or furniture are excluded in this definition of a collection route.

Since a collection system is influenced by the storage method, pickup point requirement, kind of equipment, crew size, and disposal site, the goal of a solid waste management system is to minimize the cost of collection while maintaining a high level of service. The purpose of this

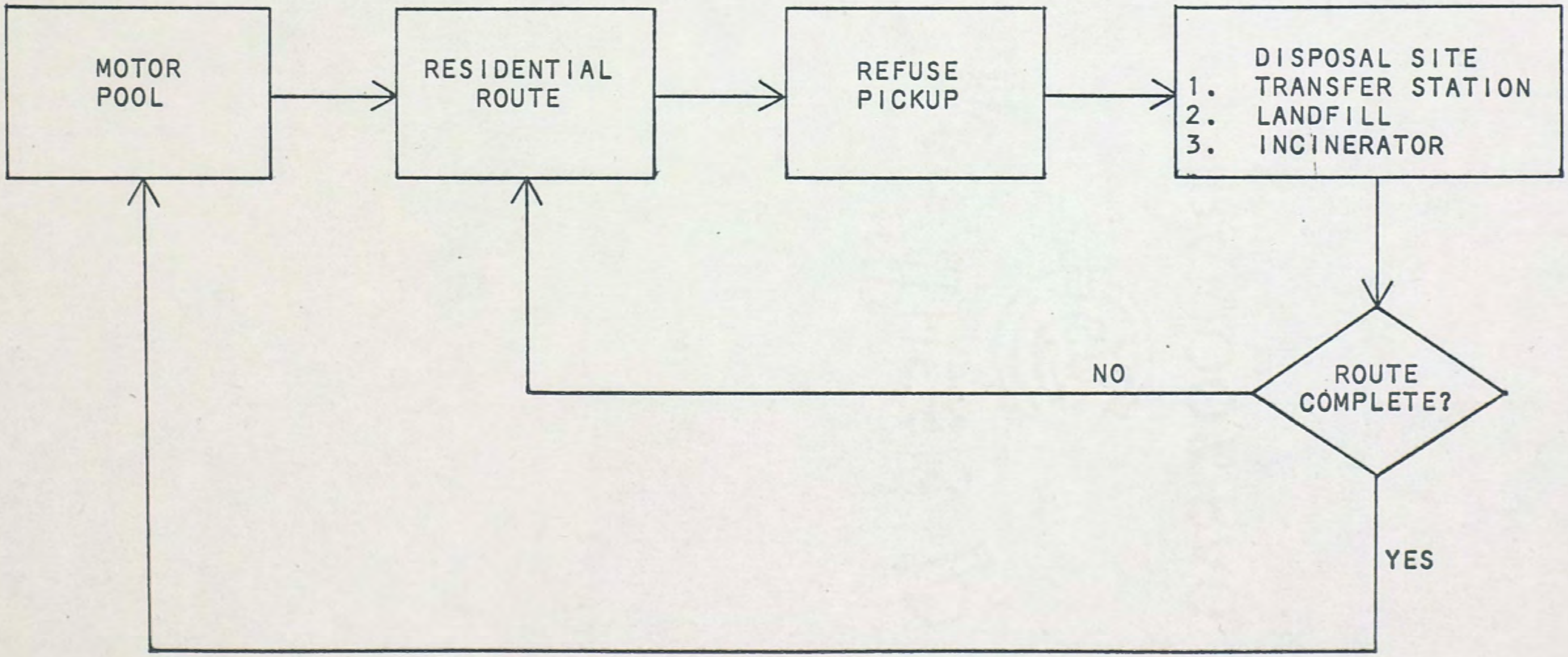

FIGURE 2. Flow Diagram of a Simplified Solid Waste Collection System.

research is to develop a model that will provide the solid waste manager with the means to evaluate a route's performance.

In Chapter III a statistical model is developed describing the system in terms of productivity and efficiency. The productivity measures will be developed in terms of man minutes per ton and man minutes per home, and the efficiency measures will be developed in terms of cost per ton and cost per home per week. Although these measures are a good representation of productivity and efficiency measures, they are by no means inclusive. For example, cost per day could be used as an alternate method to measure efficiency, or weight per day could be used as an alternate method to measure productivity. However, the measures used will provide the manager with a standard or guage of how well an individual crew is performing.

III. STATISTICAL MODEL

General

Regression analysis is a method used to determine statistical relationships between two or more variables. The most common type of relation is the linear function. By linear transformations of variables, many non-linear functional relations may be treated as special cases of linear regression analysis.

The purpose of a linear regression analysis is to determine a relationship which expresses Y as a linear function of X. The multiple linear regression equation has the following general form:

$$Y = B_0 + B_1X_1 + \ldots + B_kX_k$$

where

Y = the dependent variable,

$X_1, X_2, \ldots, X_k$ = the independent variables,

k = the number of independent variables,

$B_0, B_1, \ldots, B_k$ = the unknown regression coefficients.

The unknown coefficients are estimated on the basis of n observations for the dependent variable (y) and for the independent variables (x_i's where $i = 1, \ldots, k$). These observations are of the form:

$$y_j = B_0 + B_1x_{1j} + \ldots + B_kx_{kj} + e_j$$

where

y_j = the jth observation of the dependent variable,

$x_{1j}, x_{2j}, \ldots, x_{kj}$ = the jth observation of the x_1, $x_2, \ldots, x_k$ independent variables,

e_j = the jth error of the observation.

The least squares technique calculates estimates b_0, b_1, ..., b_k of the coefficients $B_0, B_1, \ldots, B_k$. In this research, the stepwise regression procedure is used to calculate the coefficients for the regression equations. This procedure calculates the squares of the simple correlation coefficients $r_{y1}, r_{y2}, \ldots, r_{yk}$, which gives the proportion of the dependent variable due to each of the independent variables. The variable which is entered into the regression function first is that one, x_n, say, which accounts for the largest proportion of the variation of the dependent variable. Now the squares of the first order partial correlation coefficients, $r_{yj \cdot n}$, for all $j \neq n$, give the proportion of the variation of Y unaccounted for by x_n, which may be explained by each of the remaining independent variables. The variable which is introduced next into the regression function is that one which accounts for the largest proportion of the remaining variation. Next a partial F-test for removal of x_n (assuming another variable entered the regression) is made. Continuing in this manner, we may introduce each of the remaining k-2 independent variables into the regression function (Smillie, 1966).

Assumptions

Since the purpose of this research was to develop a standardized model for solid waste managers, usual sampling techniques were not used. Instead, six of the best systems that could be found were selected. Although this may defy the usual assumption of randomness in statistical analysis, it serves the purpose of this research of making comparisons to a standard crew.

Also, in order to eliminate local cost differences that existed among the systems selected, standardized costs were utilized. Therefore, cost for service being performed would be primarily a function of the operational performance. These costs were the average costs for all the systems and are shown in Tables 2 and 3. The daily cost of depreciation, maintenance, and insurance and fees is a function of the number of normal work days for each of the systems. Table 4 shows the number of normal work days for each of the systems.

The regression equations used in this research are assumed to be linear functions or, by use of transformations, special cases of linear functions. Also, the following usual assumptions were made about the residuals e_i in the multiple linear regression model:

TABLE 2

STANDARD COSTS FOR VEHICLES

SIZE	INITIAL COST	DEPRECIATION COST PER YEAR	MAINTENANCE COST PER YEAR	FUEL COST PER GALLON	OIL COST PER QUART	INSURANCE AND FEES
13	$15,900	$3,180	$ 874.50	$0.17	$0.23	$1,200
16	16,700	3,340	918.50	0.17	0.23	1,200
18	17,000	3,400	935.00	0.17	0.23	1,200
20	22,700	4,540	1,248.50	0.17	0.23	1,200
25	23,900	4,780	1,314.50	0.17	0.23	1,200
33	30,000	6,000	1,650.00	0.17	0.23	1,200

TABLE 3

STANDARD MANPOWER COSTS

	WAGES PER HOUR	FRINGE BENEFITS PER HOUR	PERSONNEL OVERHEAD PER HOUR	OVERTIME FACTOR	TOTAL
Driver	$4.34	$0.79	$0.57	1.5	$5.70
Collector	4.15	0.76	0.54	1.5	5.45

TABLE 4

STANDARD NUMBER OF WORK DAYS PER YEAR

SYSTEM NUMBER	NUMBER OF WORK DAYS
1	260
2	255
3	310
4	260
5	252
6	207

$Y = b_0 + b_1X_{1i} + \ldots + b_kX_{ki} + e_i$, $i = 1, 2, \ldots, n$.

1) e_i is a random variable with mean zero and variance sigma squared.

2) e_i and e_j are uncorrelated, $i \neq j$, so that $\mathrm{cov}(e_i, e_j) = 0$.

3) e_i is a normally distributed random variable, with mean zero and variance sigma squared (Draper, 1966).

Formulation

An initial list of possible predictive (independent) variables was chosen from the daily collection information route forms and system definition table. This list included the following variables:

Type of operating agency - public or private

Crew size - includes driver and collectors

Collection frequency - once or twice a week

Point of collection - curb/alley or backyard

Collection methodology - one or both sides of the street

Incentive system - task or eight hour day

Union representation - yes or no

Percent one-way items - percent of non-returnable items (bags, etc.)

Percent two-way items - percent of returnable items (cans, etc.)

Date - day data was gathered

Day - Monday, Tuesday, etc.

Vehicle size - cubic yards

Vehicle type - rear or side loader

Transport time (hours)

Transport miles

Collection time (hours)

Collection miles

Weight per day (tons)

Loads per day

Homes served

Pounds per home per day

Collection time per home

Total time worked

Total paid time

Since the above list is substantial, it was investigated initially to determine, if at all possible, the feasibility of reducing the items to a workable number. After consulting experts in the area of solid waste management the list was reduced to the following fifteen variables:

Incentive system

Union representation

Day of week

Frequency of collection

Percent one-way items

Vehicle size

Crew size

Transport time (hours)

Collection time (hours)

Collection miles

Weight per day

Loads per day

Homes served

Total time worked

Total paid time

The majority of the above variables take on values over some continuous range. However, seven of the above are discrete in nature. In other words, they only have two or more distinct levels. Since this is true, it is not possible to set up a continuous scale for them. They must be assigned levels in order to account for the fact that the various variables may have separate deterministic effects on the response. These variables are called "dummy" variables (Draper, 1966). Listed below are the seven "dummy" variables and their assigned values:

Incentive system = -1, if task.
= 1, if eight hour day.

Crew size = -1, if one man crew.
= 1, if three man crew.

Frequency of collection = -1, if once a week collection.
= 1, if twice a week collection.

Total paid time = -1, if eight hour day.
= 1, if ten hour day.

Union representation = -1, if yes.
= 1, if no.

Vehicle size = -2, if 16 cubic yard vehicle.
= -1, if 18 cubic yard vehicle.
= 0, if 20 cubic yard vehicle.
= 1, if 25 cubic yard vehicle.
= 2, if 33 cubic yard vehicle.

Day of week = -5, if Monday.
= -3, if Tuesday.
= -1, if Wednesday.
= 1, if Thursday.
= 3, if Friday.
= 5, if Saturday.

In order to eliminate seasonal variations in the data, a random sample of one week of data out of every month for each route was utilized in determining the regression equations. Therefore, a total sample size of 1,387 days of data was selected.

The square of the correlation coefficient, r, gives a measure of goodness of fit or variation explained in the regression equation. Since there is not any set procedure for selecting a squared correlation coefficient and in order to make the model as accurate as possible, a r^2 of 85 percent was selected. Hence, all the regression equations will have at least 85 percent of their variation explained.

To determine a stopping or cutoff point for the number of variables included in each regression, the average residual mean square for the set of variables at each step of the stepwise regression program was calculated and plotted against the number of variables in the equation. However, this procedure yields only a guideline for selecting the number of variables to enter the regression. It does not pick out the specific set of variables, and the procedure does not guarantee that there is not a better set of variables (Draper, 1966). Figures 3 through 9 show the residual plots for each of the seven regression runs.

Figure 10, described below, shows a flow diagram of the procedure used in determining each of the regression equations.

1. Run stepwise regression program with all variables.
2. Plot average residual mean square graph.
3. Determine number of variables to be used in the regression by investigating the residual plot.
4. Determine if r^2 is greater than or equal to 85 percent. If yes, stop.
5. Run stepwise regression program with the variables determined in step 3, but also include the square and the reciprocal relation of all non-dummy variables.
6. Go to step 2.

In step 5 above, the reason only the reciprocal and the square relations were utilized was to make the model as simple as possible. For example, if a log or exponential relation was used, it would be very difficult for a solid waste manager to interpret the equation. In addition, the

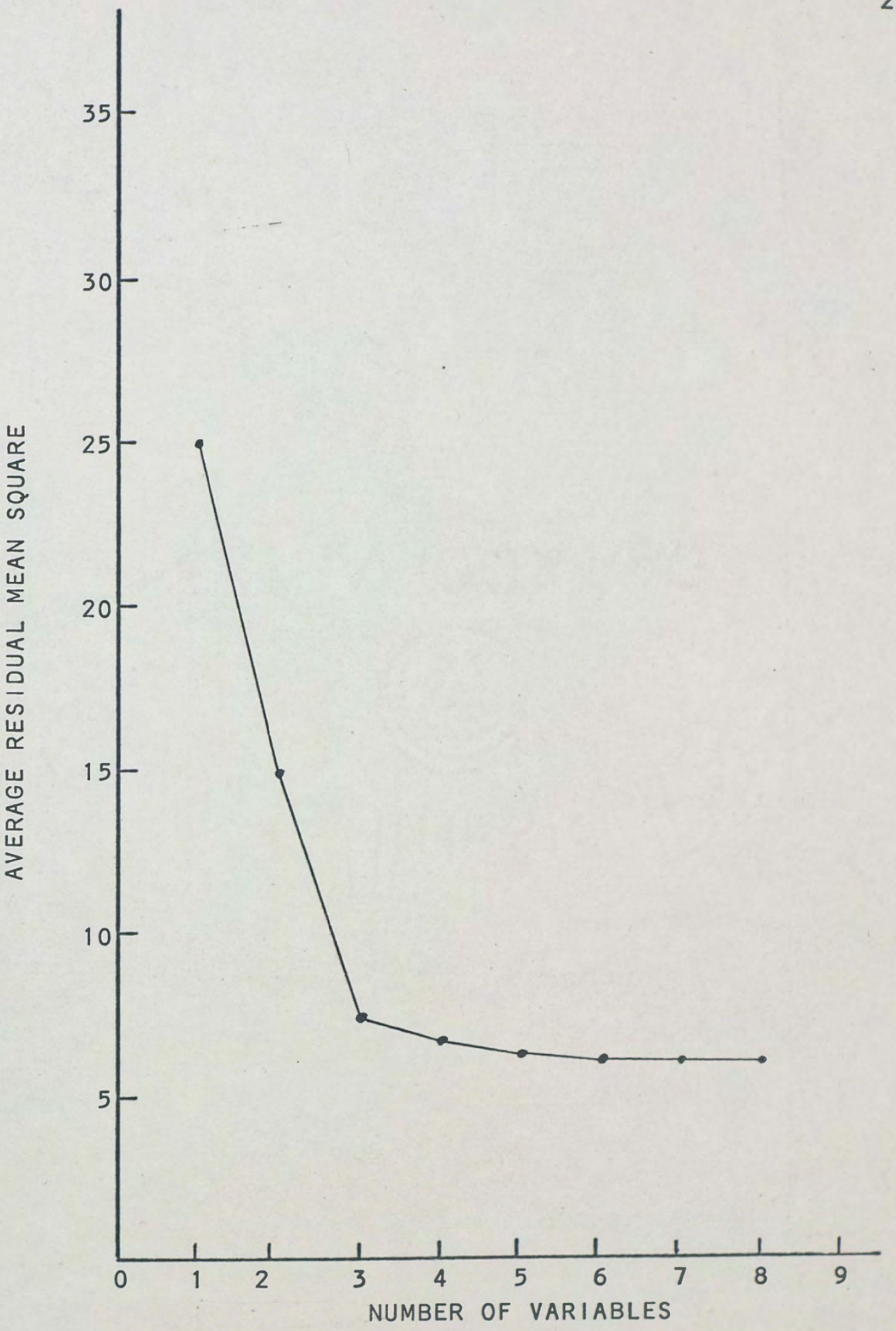

FIGURE 3. Plot of average residual mean square against number of variables in the regression.

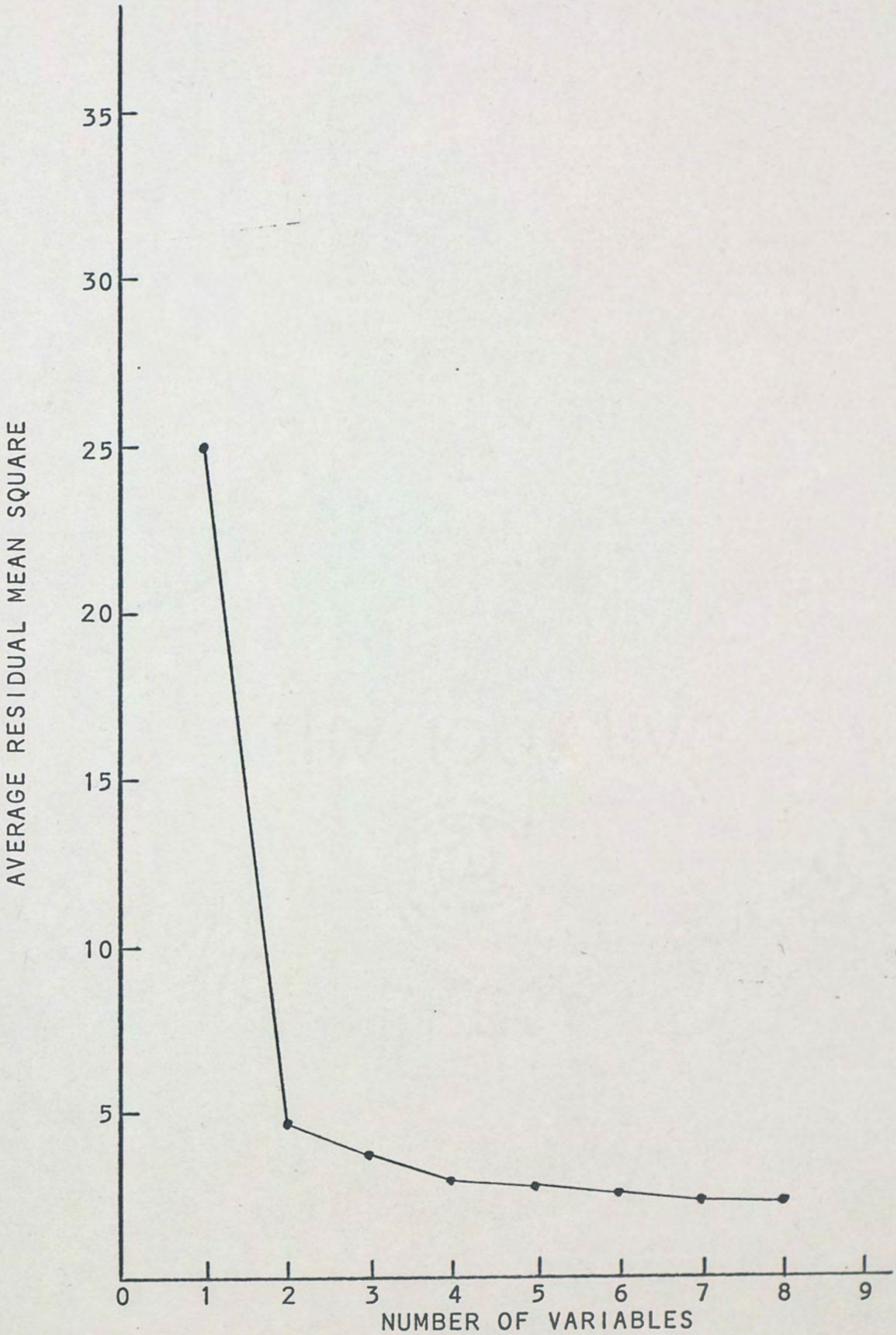

FIGURE 4. Plot of average residual mean square against number of variables in the regression. Second run, cost per ton.

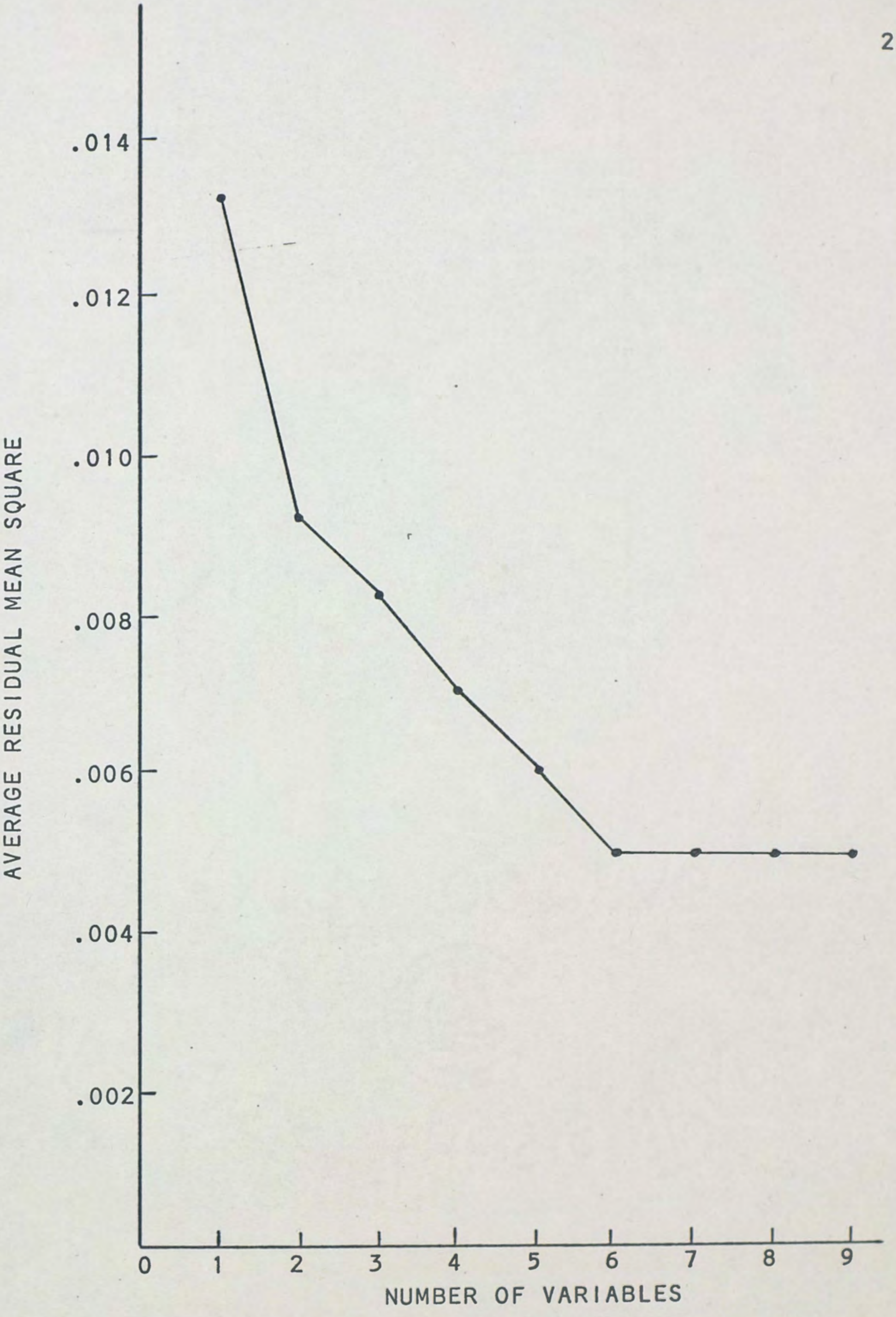

FIGURE 5. Plot of average residual mean square against number of variables in the regression. First run, cost per home per week.

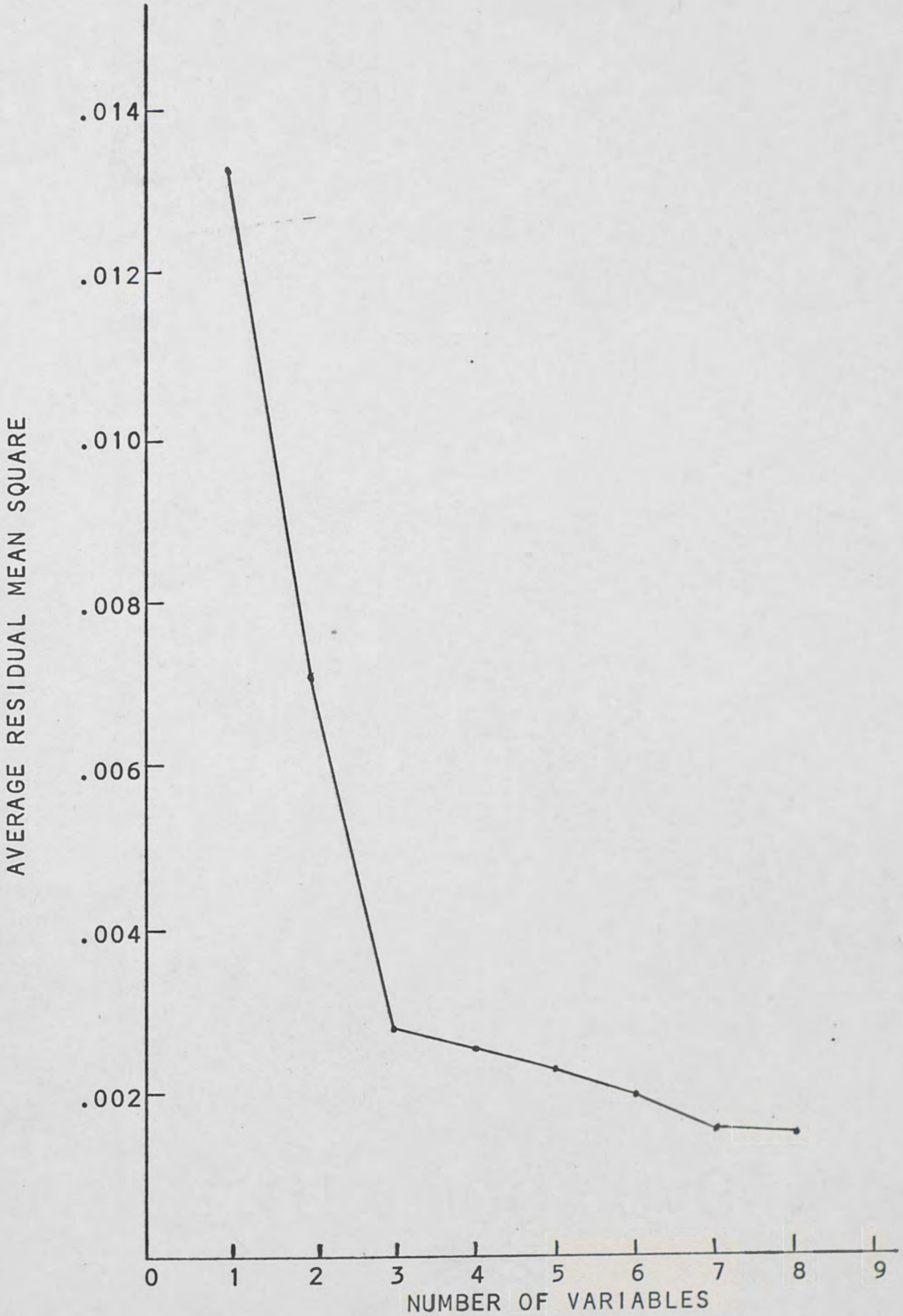

FIGURE 6. Plot of average residual mean square against number of variables in the regression. Second run, cost per home per week.

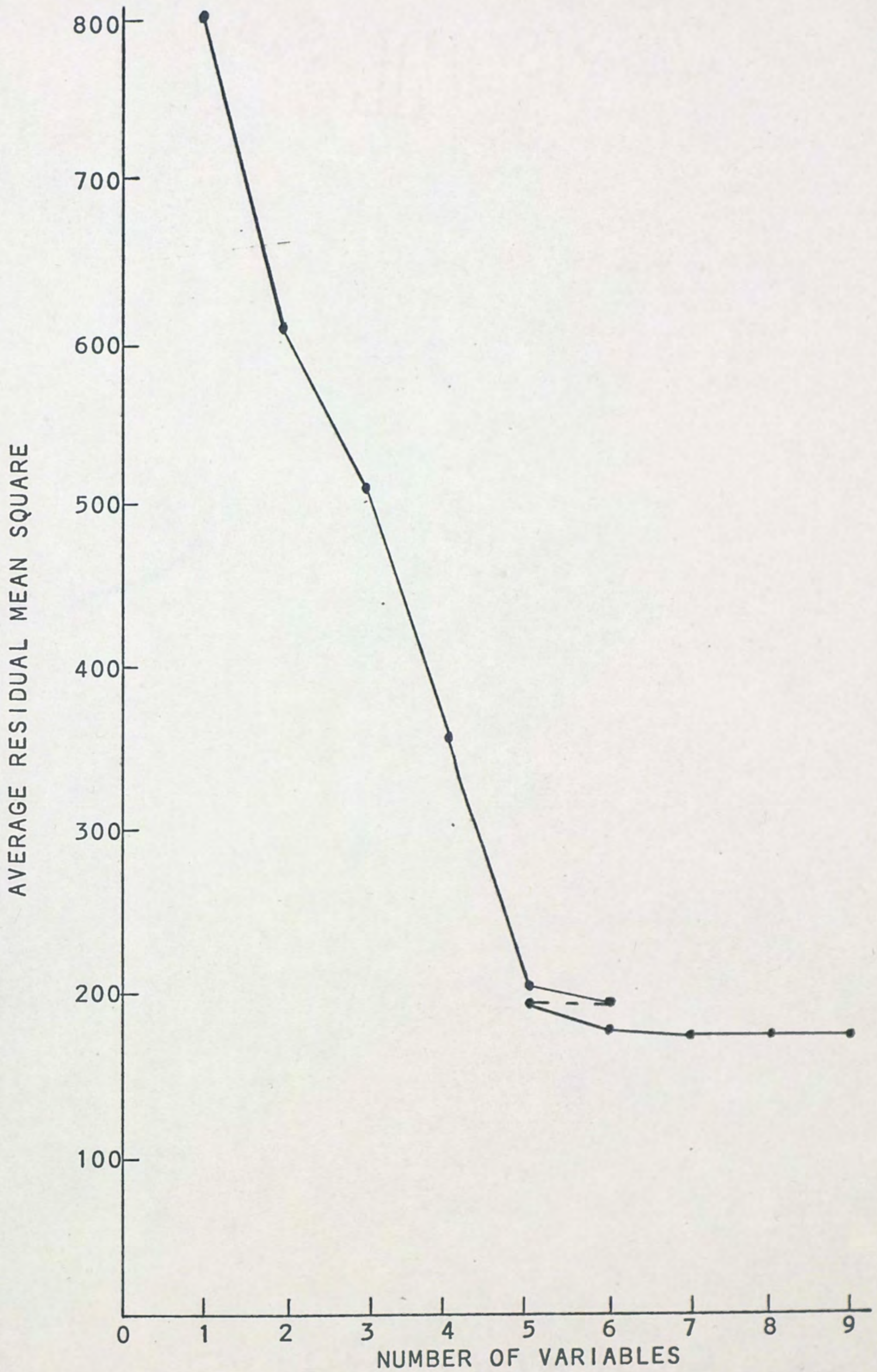

FIGURE 7. Plot of average residual mean square against number of variables in the regression. First run, man minutes per ton.

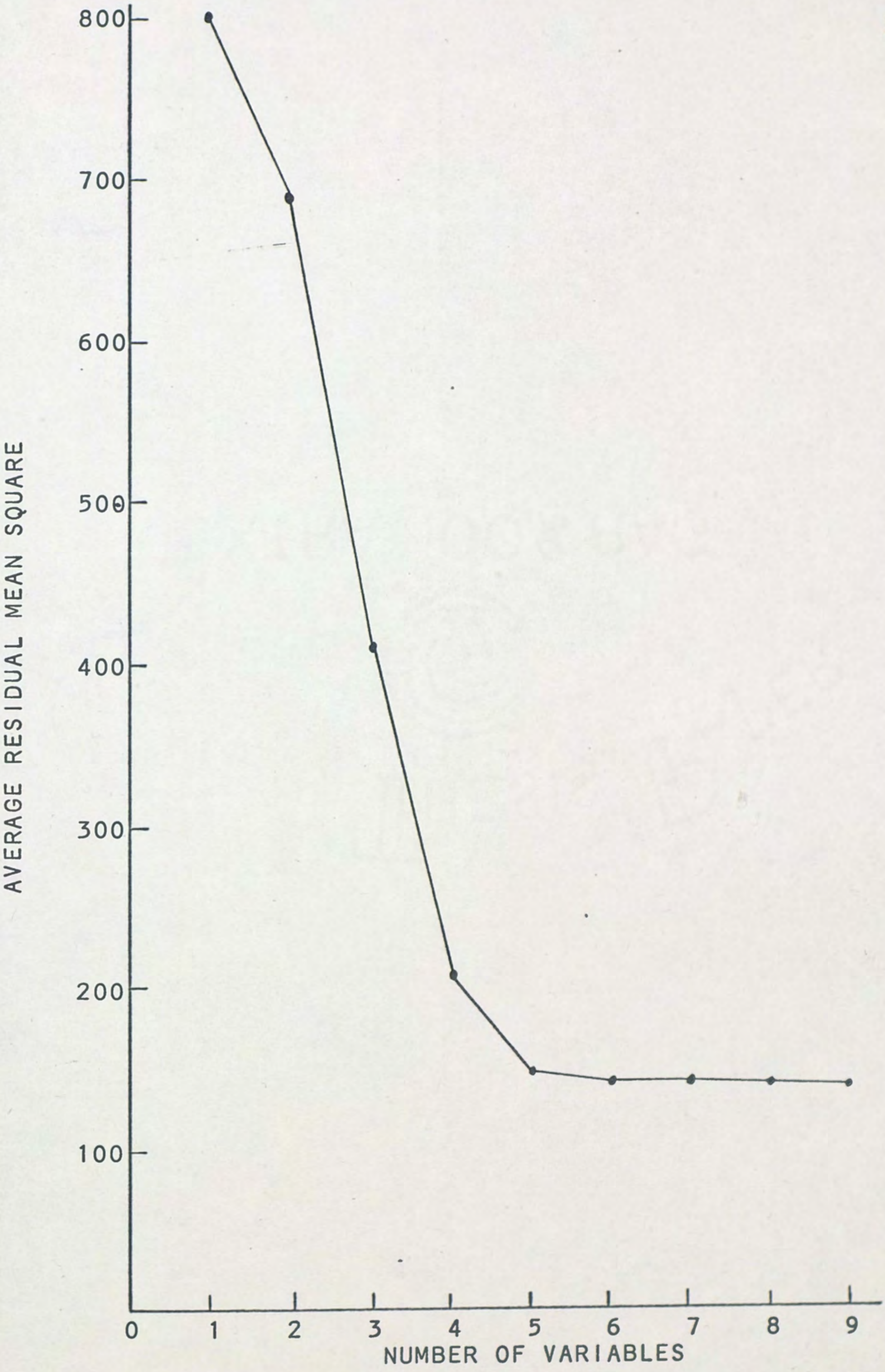

FIGURE 8. Plot of average residual mean square against number of variables in the regression. Second run, man minutes per ton.

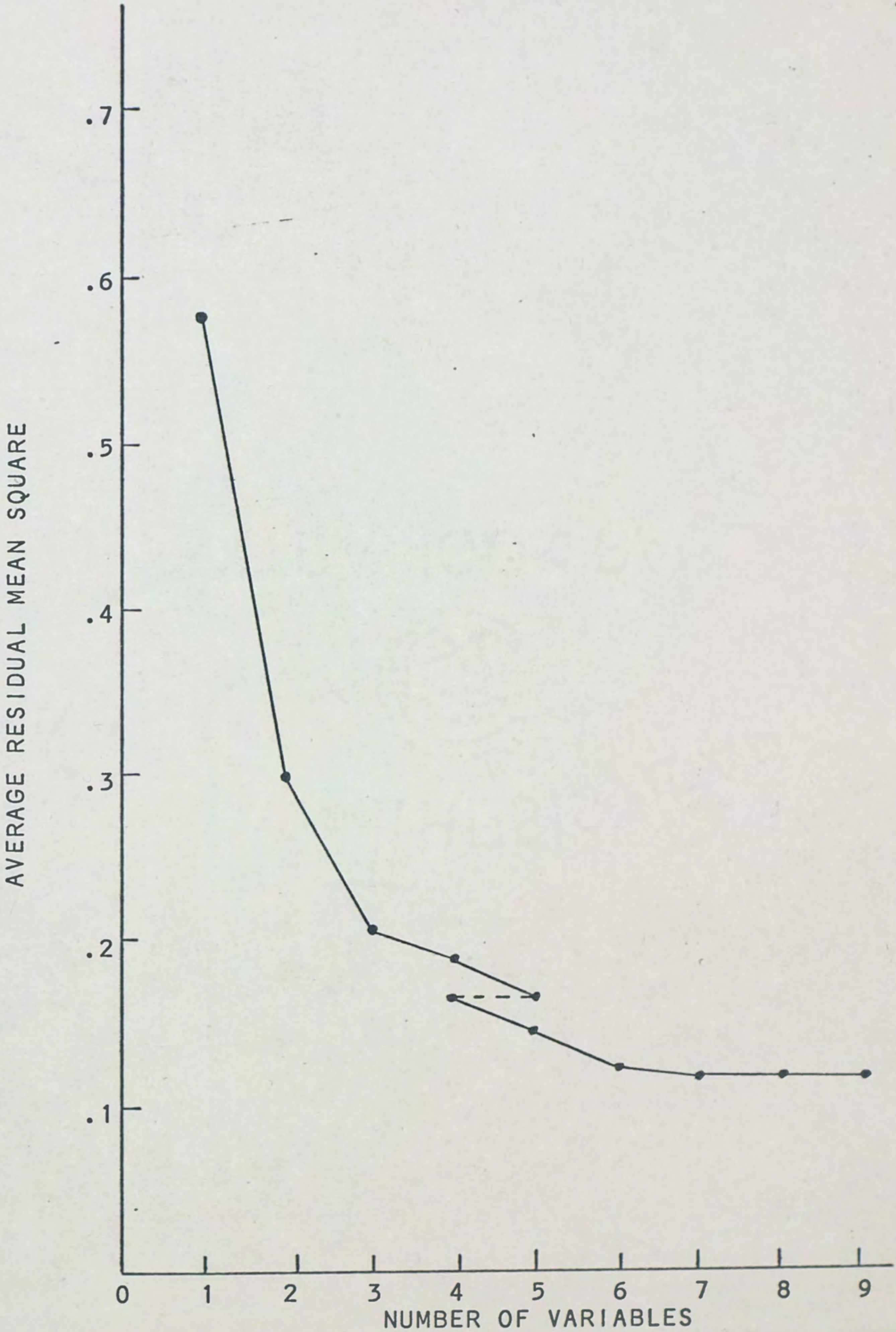

FIGURE 9. Plot of average residual mean square against number of variables in the regression. First run, man minutes per home.

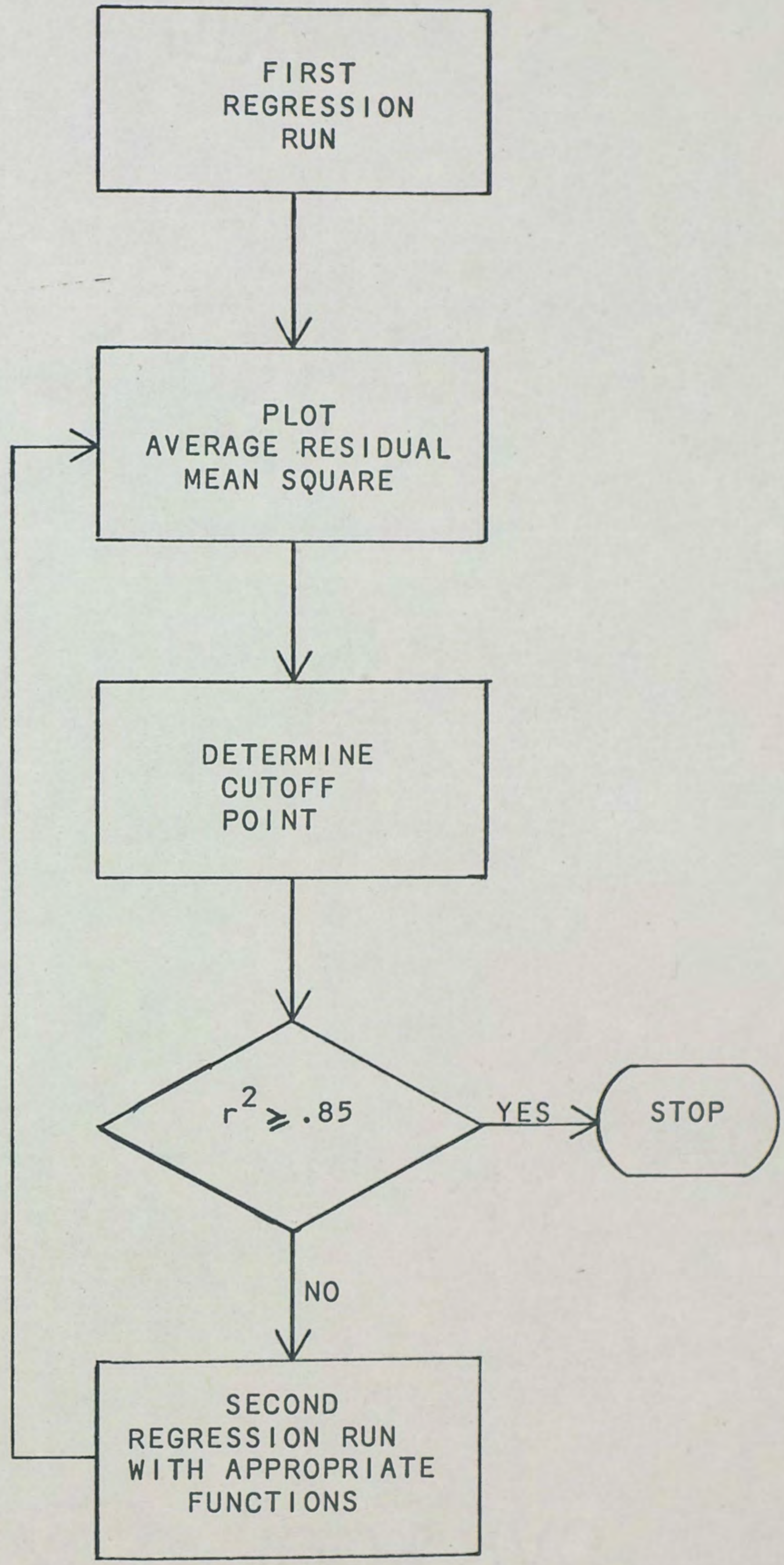

FIGURE 10. Flow diagram of the procedure which determined each regression equation.

square and reciprocal relation provided excellent results. These results are shown in the next subsection.

Results

Cost Per Ton

Total cost per ton is one of the parameters directly related to the efficiency of collection operations. The equation that resulted from the regression analysis is the following:

$$Y = 105.9702 - 3660.929/X_1 - 0.0086X_1^2 + 3.9259X_2 - 0.5171X_3 + 70.1000/X_3$$

where

X_1 = percent one way items.

X_2 = -1, if crew size is one.

= +1, if crew size is three.

X_3 = weight per day.

The correlation coefficient squared, r^2, was 93 percent. Therefore most of the variations in cost have been explained by the chosen parameters. The Appendix contains the supporting computer printouts.

Total Cost Per Home Per Week

Total cost per home per week is the other parameter that is directly related to the efficiency of collection operations. The equation that resulted from the regression analysis is the following:

$$Y = 3.5791 - 0.1175X_1 - 135.5283/X_2 - 0.0003X_3 - 0.0106X_4 + 145.6858X_5^2 - 0.0416/X_5 + 0.0544X_6$$

where

X_1 = -1, if union is represented.

= +1, if no union is represented.

X_2 = homes served

X_3 = -1, if total paid time is eight hours.

= +1, if total paid time is ten hours.

X_4 = -2, if 16 cubic yard vehicle.

= -1, if 18 cubic yard vehicle.

= 0, if 20 cubic yard vehicle.

= +1, if 25 cubic yard vehicle.

= +2, if 33 cubic yard vehicle.

X_5 = percent one-way items.

X_6 = -1, if task system.

= +1, if eight hour day.

The correlation coefficient squared, r^2, was 93.6 percent. Therefore most of the variations in cost have been explained by the chosen parameters. The Appendix contains the supporting computer printouts.

Man Minutes Per Ton

Man minutes per ton is one of the parameters directly related to the productivity of collection operations. The equation that resulted from the regression analysis is the following:

$$Y = -13.4994 + 10.6305X_1 + 39.7259X_2 + 309.4531/X_2 + 15.7717X_3 - 3.2850X_4$$

where

X_1 = -1, if union is represented.

= +1, if no union is represented.

X_2 = weight per day.

X_3 = -1, if 1 man crew.

= +1, if 3 man crew.

X_4 = collection time.

The correlation coefficient squared, r^2, was 87.3 percent. Therefore most of the variations in productivity have been explained by the chosen parameters. The Appendix contains the supporting computer printouts.

Man Minutes Per Home

Man minutes per home per week is the other parameter that is directly related to the efficiency of collection operations. The equation that resulted from the regression analysis is the following:

$$Y = 3.6303 - 0.538X_1 - 0.3329X_2 + 1.0156X_3 + 0.2693X_4 - 0.0014X_5 - 0.4971X_6$$

where

X_1 = percent one-way items.

X_2 = -2, if 16 cubic yard vehicle.

= -1, if 18 cubic yard vehicle.

= 0, if 20 cubic yard vehicle.

= +1, if 25 cubic yard vehicle.

= +2, if 33 cubic yard vehicle.

X_3 = -1, if 1 man crew.

= +1, if 3 man crew.

X_4 = crew size.

X_5 = homes served.

X_6 = -1, if total paid time is eight hours.

= +1, if total paid time is ten hours.

The correlation coefficient squared, r^2, was 86.6 percent. Therefore most of the variations in productivity have been explained by the chosen parameters. The Appendix contains the supporting computer printouts.

IV. CONCLUSIONS

The goal of this research has been the development of tools to gain a better understanding of a solid waste system. Thus, it is on the basis of the results of the statistical model developed in the last section that the success of such an undertaking should be measured.

This model provides the manager with a goal through which he can evaluate each crew's performance. Most important, the equations have uncomplicated forms and should be easily used by the manager. Simplicity in the equations was an objective. That is why a cutoff procedure was used to limit the number of variables entering the equations, and all equations were developed as linear functions.

While the specific systems used for model development were selected by non-statistical means, it in no way affects the validity of the model. Since each week of data was randomly selected, and the data represent the four "best" routes of the best systems that could be found, the equations should be reliable predictors of expected performance based on local conditions. The equations cannot, however, be used to predict a performance outside the limits of the systems studied. For example, the equations cannot be used to predict the performance of a three man backyard system or a four man curbside system. Because there exist many systems that closely approximate the definition of the systems used in this research, the regression model should have a broad general application.

In using the cost equations, it must be remembered that they are based on standardized cost data; therefore, the validity of these equations exists only when the costs of the solid waste system are comparable to the standardized costs of the data sources. Since normal distribution of costs was assumed, extreme deviations from the cost figures in Tables 2 and 3 would lead to substantial statistical error. However, the productivity measures, man minute per ton and man minute per home, are not based on standardized costs. Hence, they are reliable predictors of the productivity measures regardless of any cost differences that may exist.

The overall conclusion of this research is that a model such as developed, limited though it may be by applying only to a subproblem of the total collection system, can still provide a great deal of insight into the system. The type of questions amenable to study using this technique provide a wealth of information to the decision maker charged with operation of the system. It is hoped that such a model will become an increasingly valuable tool in the management and planning of a solid waste system.

APPENDIX

All of the first regression runs were expressed as a function of the following variables:

VAR(1) = Union Representation
VAR(2) = Day of Week
VAR(3) = Frequency of Collection
VAR(4) = Percent One-Way Items
VAR(5) = Vehicle Size
VAR(6) = Crew Size
VAR(7) = Transport Time
VAR(8) = Collection Miles
VAR(9) = Weight Per Day
VAR(10) = Number of Loads
VAR(11) = Homes Served
VAR(12) = Incentive System
VAR(13) = Total Time Worked
VAR(14) = Total Paid Time

Cost per ton, second run, was expressed as a function of the following variables:

VAR(1) = Union Representation
VAR(2) = Percent One-Way Items
VAR(3) = Reciprocal of VAR(2)
VAR(4) = VAR(2) Squared
VAR(5) = Crew Size
VAR(6) = Weight Per Day
VAR(7) = Reciprocal of VAR(6)
VAR(8) = VAR(6) Squared
VAR(9) = Total Paid Time

Cost per home, second run, was expressed as a function of the following variables:

VAR(1) = Union Representation
VAR(2) = Percent One-Way Items
VAR(3) = Reciprocal of VAR(2)
VAR(4) = VAR(2) Squared
VAR(5) = Vehicle Size

VAR(6) = Homes Served
VAR(7) = Reciprocal of VAR(6)
VAR(8) = VAR(6) Squared
VAR(9) = Incentive System
VAR(10) = Total Paid Time

Man minutes per ton, second run, was expressed as a function of the following variables:

VAR(1) = Union Representation
VAR(2) = Frequency of Collection
VAR(3) = Percent One-Way Items
VAR(4) = Reciprocal of VAR(3)
VAR(5) = VAR(3) Squared
VAR(6) = Crew Size
VAR(7) = Collection Time
VAR(8) = Reciprocal of VAR(7)
VAR(9) = VAR(7) Squared
VAR(10) = Weight Per Day
VAR(11) = Reciprocal of VAR(10)
VAR(12) = VAR(10) Squared

```
COST PER TON, ALL VARIABLES.
F LEVEL TO ENTER EQUALS F LEVEL TO DELETE =3.000.

AVERAGES
VAR( 1)=     -0.351, VAR( 2)=     -0.642, VAR( 3)=     -0.318,
VAR( 4)=     54.120, VAR( 5)=      0.800, VAR( 6)=     -0.056,
VAR( 7)=      1.636, VAR( 8)=      9.580, VAR( 9)=      4.461,
VAR(10)=     10.035, VAR(11)=      1.740, VAR(12)=    433.208,
VAR(13)=     -0.373, VAR(14)=      6.357, VAR(15)=     -0.725,
VAR(16)=     13.672

STANDARD DEVIATIONS
VAR( 1)=      0.937, VAR( 2)=      3.060, VAR( 3)=      0.948,
VAR( 4)=      9.129, VAR( 5)=      0.807, VAR( 6)=      0.999,
VAR( 7)=      0.779, VAR( 8)=      5.719, VAR( 9)=      1.020,
VAR(10)=      4.139, VAR(11)=      0.677, VAR(12)=    207.783,
VAR(13)=      0.928, VAR(14)=      1.339, VAR(15)=      0.689,
VAR(16)=      6.098

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.0216, VAR( 1, 3)=-0.4985,
VAR( 1, 4)=-0.5004, VAR( 1, 5)= 0.1696, VAR( 1, 6)=-0.6555,
VAR( 1, 7)= 0.2756, VAR( 1, 8)=-0.0674, VAR( 1, 9)=-0.1139,
VAR( 1,10)=-0.0888, VAR( 1,11)=-0.0050, VAR( 1,12)=-0.2963,
VAR( 1,13)= 0.2319, VAR( 1,14)= 0.0642, VAR( 1,15)=-0.2769,
VAR( 1,16)=-0.5514
VAR( 2, 2)= 1.0000, VAR( 2, 3)= 0.0511, VAR( 2, 4)=-0.0485,
VAR( 2, 5)= 0.1049, VAR( 2, 6)=-0.0738, VAR( 2, 7)=-0.0836,
VAR( 2, 8)= 0.0681, VAR( 2, 9)=-0.2046, VAR( 2,10)=-0.2133,
VAR( 2,11)=-0.1287, VAR( 2,12)=-0.0545, VAR( 2,13)=-0.0130,
VAR( 2,14)=-0.2047, VAR( 2,15)=-0.0659, VAR( 2,16)= 0.1884
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.1793, VAR( 3, 5)= 0.3476,
VAR( 3, 6)=-0.0986, VAR( 3, 7)=-0.3609, VAR( 3, 8)= 0.3292,
VAR( 3, 9)= 0.1530, VAR( 3,10)=-0.1688, VAR( 3,11)=-0.2119,
VAR( 3,12)= 0.5419, VAR( 3,13)=-0.4863, VAR( 3,14)=-0.0462,
VAR( 3,15)= 0.5555, VAR( 3,16)= 0.2244
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.6983, VAR( 4, 6)= 0.7870,
VAR( 4, 7)=-0.2582, VAR( 4, 8)= 0.0050, VAR( 4, 9)=-0.2014,
VAR( 4,10)= 0.5135, VAR( 4,11)= 0.5145, VAR( 4,12)= 0.2462,
VAR( 4,13)=-0.2985, VAR( 4,14)=-0.3208, VAR( 4,15)= 0.2137,
VAR( 4,16)= 0.1326
VAR( 5, 5)= 1.0000, VAR( 5, 6)=-0.7625, VAR( 5, 7)=-0.1146,
VAR( 5, 8)= 0.1604, VAR( 5, 9)= 0.1837, VAR( 5,10)=-0.5612,
VAR( 5,11)=-0.5875, VAR( 5,12)=-0.2523, VAR( 5,13)=-0.0695,
VAR( 5,14)= 0.1005, VAR( 5,15)=-0.3962, VAR( 5,16)=-0.1129
VAR( 6, 6)= 1.0000, VAR( 6, 7)= 0.0421, VAR( 6, 8)=-0.2041,
VAR( 6, 9)=-0.0626, VAR( 6,10)= 0.5027, VAR( 6,11)= 0.4441,
VAR( 6,12)= 0.3221, VAR( 6,13)= 0.0578, VAR( 6,14)=-0.0437,
VAR( 6,15)= 0.4225, VAR( 6,16)= 0.4087
```

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VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.3038, VAR( 7, 9)= 0.1079,
VAR( 7,10)= 0.2653, VAR( 7,11)= 0.2839, VAR( 7,12)=-0.1609,
VAR( 7,13)= 0.5540, VAR( 7,14)= 0.6376, VAR( 7,15)=-0.0612,
VAR( 7,16)=-0.1926
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.1173, VAR( 8,10)=-0.0209,
VAR( 8,11)= 0.0239, VAR( 8,12)= 0.1952, VAR( 8,13)=-0.4932,
VAR( 8,14)=-0.0667, VAR( 8,15)= 0.0656, VAR( 8,16)=-0.1258
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.0683, VAR( 9,11)=-0.0315,
VAR( 9,12)=-0.0602, VAR( 9,13)= 0.1788, VAR( 9,14)= 0.8225,
VAR( 9,15)=-0.0350, VAR( 9,16)=-0.0725
VAR(10,10)= 1.0000, VAR(10,11)= 0.8704, VAR(10,12)= 0.3395,
VAR(10,13)=-0.0697, VAR(10,14)= 0.1822, VAR(10,15)= 0.3755,
VAR(10,16)=-0.4784
VAR(11,11)= 1.0000, VAR(11,12)= 0.3157, VAR(11,13)=-0.1105,
VAR(11,14)= 0.1195, VAR(11,15)= 0.3451, VAR(11,16)=-0.4142
VAR(12,12)= 1.0000, VAR(12,13)=-0.4721, VAR(12,14)=-0.1132,
VAR(12,15)= 0.8095, VAR(12,16)= 0.0831
VAR(13,13)= 1.0000, VAR(13,14)= 0.4099, VAR(13,15)=-0.2701,
VAR(13,16)= 0.0937
VAR(14,14)= 1.0000, VAR(14,15)=-0.0396, VAR(14,16)=-0.1561
VAR(15,15)= 1.0000, VAR(15,16)= 0.1516
```

```
STEP NUMBER     1            ENTER VARIABLE  1
STANDARD DEVIATION OF RESIDUALS=               5.089
STD. DEV. AS PERCENT OF RESPONSE MEAN=        37.224
PERCENT VARIATION EXPLAINED R-SQ=             30.409
CORRECTED R-SQ AS A PERCENT=                  30.359
GOODNESS OF FIT OR OVERALL F,F(  1,385)=  605.200
CONSTANT TERM=                            12.41142076

VAR         COEFF                STD DEV            T VALUE
                                  COEFF
  1        -3.59033015           0.14594359        -24.60080797

STEP NUMBER     2            ENTER VARIABLE 10
STANDARD DEVIATION OF RESIDUALS=               3.934
STD. DEV. AS PERCENT OF RESPONSE MEAN=        28.775
PERCENT VARIATION EXPLAINED R-SQ=             58.444
CORRECTED R-SQ AS A PERCENT=                  58.384
GOODNESS OF FIT OR OVERALL F,F(  2,384)=  973.218
CONSTANT TERM=                            20.16446448

VAR         COEFF                STD DEV            T VALUE
                                  COEFF
  1        -3.89757675           0.11326634        -34.41072523
 10        -0.78332127           0.02563539        -30.55624693

STEP NUMBER     3            ENTER VARIABLE  6
STANDARD DEVIATION OF RESIDUALS=               2.723
STD. DEV. AS PERCENT OF RESPONSE MEAN=        19.914
PERCENT VARIATION EXPLAINED R-SQ=             80.112
CORRECTED R-SQ AS A PERCENT=                  80.069
GOODNESS OF FIT OR OVERALL F,F(  3,383)=1856.985
CONSTANT TERM=                            26.56256382

VAR         COEFF                STD DEV            T VALUE
                                  COEFF
  1        -0.83398148           0.11123466         -7.49749641
  6         4.66568679           0.12019566         38.81743054
 10        -1.28787630           0.02199295        -58.55858382

STEP NUMBER     4            ENTER VARIABLE  4
STANDARD DEVIATION OF RESIDUALS=               2.586
STD. DEV. AS PERCENT OF RESPONSE MEAN=        18.916
PERCENT VARIATION EXPLAINED R-SQ=             82.068
CORRECTED R-SQ AS A PERCENT=                  82.016
GOODNESS OF FIT OR OVERALL F,F(  4,382)=1581.236
CONSTANT TERM=                            34.41289963

VAR         COEFF                STD DEV            T VALUE
                                  COEFF
```

1	-0.90302907	0.10581059	-8.53439198
4	-0.15549244	0.01266409	-12.27821901
6	5.61841704	0.13804525	40.69982227
10	-1.22873418	0.02143908	-57.31283210

STEP NUMBER 5 ENTER VARIABLE 15
STANDARD DEVIATION OF RESIDUALS= 2.510
STD. DEV. AS PERCENT OF RESPONSE MEAN= 18.356
PERCENT VARIATION EXPLAINED R-SQ= 83.127
CORRECTED R-SQ AS A PERCENT= 83.065
GOODNESS OF FIT OR OVERALL F,F(5,381)=1360.692
CONSTANT TERM= 34.00014102

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.80420556	0.10322501	-7.79080130
4	-0.12255776	0.01278840	-9.58350718
6	5.24977236	0.13969047	37.58146518
10	-1.28639159	0.02170697	-59.26168608
15	1.07207394	0.11518519	9.30739405

STEP NUMBER 6 ENTER VARIABLE 2
STANDARD DEVIATION OF RESIDUALS= 2.480
STD. DEV. AS PERCENT OF RESPONSE MEAN= 18.140
PERCENT VARIATION EXPLAINED R-SQ= 83.533
CORRECTED R-SQ AS A PERCENT= 83.461
GOODNESS OF FIT OR OVERALL F,F(6,380)=1166.718
CONSTANT TERM= 34.09761067

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.79606012	0.10202124	-7.80288592
2	0.13044982	0.02235671	5.83492817
4	-0.12743592	0.01266571	-10.06149112
6	5.27266910	0.13810429	38.17889522
10	-1.26203848	0.02185407	-57.74844726
15	1.05817131	0.11385622	9.29392613

STEP NUMBER 7 ENTER VARIABLE 11
STANDARD DEVIATION OF RESIDUALS= 2.475
STD. DEV. AS PERCENT OF RESPONSE MEAN= 18.106
PERCENT VARIATION EXPLAINED R-SQ= 83.606
CORRECTED R-SQ AS A PERCENT= 83.523
GOODNESS OF FIT OR OVERALL F,F(7,379)=1004.675
CONSTANT TERM= 34.23535346

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.86351902	0.10538805	-8.19370923
2	0.12416412	0.02245788	5.52875552

4	-0.13559354	0.01306144	-10.38121179
6	5.27933936	0.13787230	38.29151576
10	-1.32923757	0.03474662	-38.25516556
11	0.53103148	0.21373086	2.48458033
15	1.02156057	0.11459473	8.91455131

STEP NUMBER 8 ENTER VARIABLE 12
STANDARD DEVIATION OF RESIDUALS= 2.472
STD. DEV. AS PERCENT OF RESPONSE MEAN= 18.083
PERCENT VARIATION EXPLAINED R-SQ= 83.660
CORRECTED R-SQ AS A PERCENT= 83.565
GOODNESS OF FIT OR OVERALL F,F(8,378)= 881.922
CONSTANT TERM= 33.88721927

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.81014784	0.10818638	-7.48844542
2	0.12454356	0.02242974	5.55260853
4	-0.14175175	0.01336038	-10.60986127
6	5.37506941	0.14482573	37.11404918
10	-1.33283454	0.03474294	-38.36273973
11	0.52021374	0.21351660	2.43640892
12	0.00123605	0.00057953	2.13286120
15	0.71080332	0.18527451	3.83648735

```
COST PER TON, UNION, % 1 WAY ITEMS, CREW SIZE, WT/DAY, TOTAL
PAID TIME.  1 WAY ITEMS & WT/DAY ARE ALSO X**2 & 1/X.

AVERAGES
VAR( 1)=    -0.351, VAR( 2)=    54.120, VAR( 3)=     0.019,
VAR( 4)=  3012.213, VAR( 5)=    -0.056, VAR( 6)=    10.035,
VAR( 7)=     0.120, VAR( 8)=   117.824, VAR( 9)=    -0.725,
VAR(10)=    13.672

STANDARD DEVIATIONS
VAR( 1)=     0.937, VAR( 2)=     9.129, VAR( 3)=     0.003,
VAR( 4)=  1081.512, VAR( 5)=     0.999, VAR( 6)=     4.139,
VAR( 7)=     0.058, VAR( 8)=    98.921, VAR( 9)=     0.689,
VAR(10)=     6.098

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.5004, VAR( 1, 3)= 0.5318,
VAR( 1, 4)=-0.4825, VAR( 1, 5)=-0.6555, VAR( 1, 6)=-0.0888,
VAR( 1, 7)=-0.0858, VAR( 1, 8)=-0.1487, VAR( 1, 9)=-0.2769,
VAR( 1,10)=-0.5514
VAR( 2, 2)= 1.0000, VAR( 2, 3)=-0.9935, VAR( 2, 4)= 0.9985,
VAR( 2, 5)= 0.7870, VAR( 2, 6)= 0.5135, VAR( 2, 7)=-0.4510,
VAR( 2, 8)= 0.4726, VAR( 2, 9)= 0.2137, VAR( 2,10)= 0.1326
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.9858, VAR( 3, 5)=-0.8462,
VAR( 3, 6)=-0.5397, VAR( 3, 7)= 0.4755, VAR( 3, 8)=-0.4966,
VAR( 3, 9)=-0.2897, VAR( 3,10)=-0.1752
VAR( 4, 4)= 1.0000, VAR( 4, 5)= 0.7551, VAR( 4, 6)= 0.4981,
VAR( 4, 7)=-0.4371, VAR( 4, 8)= 0.4583, VAR( 4, 9)= 0.1733,
VAR( 4,10)= 0.1117
VAR( 5, 5)= 1.0000, VAR( 5, 6)= 0.5027, VAR( 5, 7)=-0.4428,
VAR( 5, 8)= 0.4642, VAR( 5, 9)= 0.4225, VAR( 5,10)= 0.4087
VAR( 6, 6)= 1.0000, VAR( 6, 7)=-0.8651, VAR( 6, 8)= 0.9608,
VAR( 6, 9)= 0.3755, VAR( 6,10)=-0.4784
VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.7222, VAR( 7, 9)=-0.2915,
VAR( 7,10)= 0.5721
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.3659, VAR( 8,10)=-0.3936
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.1516
```

```
STEP NUMBER      1            ENTER VARIABLE  7
STANDARD DEVIATION OF RESIDUALS=                5.004
STD. DEV. AS PERCENT OF RESPONSE MEAN=         36.597
PERCENT VARIATION EXPLAINED R-SQ=              32.731
CORRECTED R-SQ AS A PERCENT=                   32.682
GOODNESS OF FIT OR OVERALL F,F(  1,385)= 673.892
CONSTANT TERM=                             6.43863272

VAR        COEFF               STD DEV            T VALUE
                                COEFF
 7       60.10837715          2.31547494       25.95941595

STEP NUMBER      2            ENTER VARIABLE  5
STANDARD DEVIATION OF RESIDUALS=                2.179
STD. DEV. AS PERCENT OF RESPONSE MEAN=         15.936
PERCENT VARIATION EXPLAINED R-SQ=              87.254
CORRECTED R-SQ AS A PERCENT=                   87.236
GOODNESS OF FIT OR OVERALL F,F(  2,384)=4737.209
CONSTANT TERM=                             2.10727662

VAR        COEFF               STD DEV            T VALUE
                                COEFF
 5        5.02822051          0.06534913       76.94395860
 7       98.42080044          1.12451029       87.52325426

STEP NUMBER      3            ENTER VARIABLE  6
STANDARD DEVIATION OF RESIDUALS=                1.917
STD. DEV. AS PERCENT OF RESPONSE MEAN=         14.024
PERCENT VARIATION EXPLAINED R-SQ=              90.137
CORRECTED R-SQ AS A PERCENT=                   90.116
GOODNESS OF FIT OR OVERALL F,F(  3,383)=4213.123
CONSTANT TERM=                            10.86468498

VAR        COEFF               STD DEV            T VALUE
                                COEFF
 5        5.34742052          0.05965700       89.63609567
 6       -0.51738890          0.02573237      -20.10654100
 7       68.94175296          1.76883417       38.97581468

STEP NUMBER      4            ENTER VARIABLE  4
STANDARD DEVIATION OF RESIDUALS=                1.726
STD. DEV. AS PERCENT OF RESPONSE MEAN=         12.621
PERCENT VARIATION EXPLAINED R-SQ=              92.017
CORRECTED R-SQ AS A PERCENT=                   91.994
GOODNESS OF FIT OR OVERALL F,F(  4,382)=3982.586
CONSTANT TERM=                            14.06367134

VAR        COEFF               STD DEV            T VALUE
                                COEFF
```

4	-0.00120590	0.00006684	-18.04117614
5	6.22922862	0.07260605	85.79489271
6	-0.46837858	0.02331740	-20.08708555
7	68.86320795	1.59192099	43.25793082

STEP NUMBER 5 ENTER VARIABLE 3
STANDARD DEVIATION OF RESIDUALS= 1.617
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.824
PERCENT VARIATION EXPLAINED R-SQ= 92.998
CORRECTED R-SQ AS A PERCENT= 92.973
GOODNESS OF FIT OR OVERALL F,F(5,381)=3668.386
CONSTANT TERM= 105.97021634

VAR	COEFF	STD DEV COEFF	T VALUE
3	-3660.92292321	263.22531391	-13.90794399
4	-0.00863147	0.00053757	-16.05649028
5	3.92590817	0.17903802	21.92778997
6	-0.51711425	0.02212527	-23.37210701
7	70.09999519	1.49411598	46.91737192

STEP NUMBER 6 ENTER VARIABLE 8
STANDARD DEVIATION OF RESIDUALS= 1.572
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.496
PERCENT VARIATION EXPLAINED R-SQ= 93.387
CORRECTED R-SQ AS A PERCENT= 93.358
GOODNESS OF FIT OR OVERALL F,F(6,380)=3247.863
CONSTANT TERM= 116.22922081

VAR	COEFF	STD DEV COEFF	T VALUE
3	-3809.54289844	256.43802664	-14.85560838
4	-0.00889689	0.00052345	-16.99655140
5	3.85214268	0.17425262	22.10665635
6	-1.24579537	0.08371497	-14.88139384
7	53.53025840	2.34403720	22.83677853
8	0.02255388	0.00250412	9.00670088

STEP NUMBER 7 ENTER VARIABLE 1
STANDARD DEVIATION OF RESIDUALS= 1.532
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.205
PERCENT VARIATION EXPLAINED R-SQ= 93.722
CORRECTED R-SQ AS A PERCENT= 93.690
GOODNESS OF FIT OR OVERALL F,F(7,379)=2940.796
CONSTANT TERM= 107.69748314

VAR	COEFF	STD DEV COEFF	T VALUE
1	0.62085982	0.07238243	8.57749338
3	-3498.04975749	252.57421202	-13.84959189

4	-0.00822899	0.00051612	-15.94405580
5	4.50401750	0.18607168	24.20581933
6	-1.24109590	0.08159873	-15.20974552
7	59.38148707	2.38439450	24.90422074
8	0.02360659	0.00244385	9.65959495

STEP NUMBER 8 ENTER VARIABLE 9
STANDARD DEVIATION OF RESIDUALS= 1.531
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.195
PERCENT VARIATION EXPLAINED R-SQ= 93.737
CORRECTED R-SQ AS A PERCENT= 93.700
GOODNESS OF FIT OR OVERALL F,F(8,378)=2577.939
CONSTANT TERM= 83.11899409

VAR	COEFF	STD DEV COEFF	T VALUE
1	0.68606486	0.08069316	8.50214433
3	-2512.99177162	596.68552851	-4.21158492
4	-0.00614579	0.00125436	-4.89953782
5	5.04559782	0.35061904	14.39054124
6	-1.24714776	0.08159784	-15.28407737
7	59.19489023	2.38459264	24.82390038
8	0.02367107	0.00244205	9.69310249
9	0.30640577	0.16818392	1.82184943

```
COST PER HOME PER WEEK, ALL VARIABLES.
F LEVEL TO ENTER EQUALS F LEVEL TO DELETE =3.000.

AVERAGES
VAR( 1)=     -0.351, VAR( 2)=      -0.642, VAR( 3)=     -0.318,
VAR( 4)=     54.120, VAR( 5)=       0.800, VAR( 6)=     -0.056,
VAR( 7)=      1.636, VAR( 8)=       9.580, VAR( 9)=      4.461,
VAR(10)=     10.035, VAR(11)=       1.740, VAR(12)=    433.208,
VAR(13)=     -0.373, VAR(14)=       6.357, VAR(15)=     -0.725,
VAR(16)=      0.394

STANDARD DEVIATIONS
VAR( 1)=      0.937, VAR( 2)=       3.060, VAR( 3)=      0.948,
VAR( 4)=      9.129, VAR( 5)=       0.807, VAR( 6)=      0.999,
VAR( 7)=      0.779, VAR( 8)=       5.719, VAR( 9)=      1.020,
VAR(10)=      4.139, VAR(11)=       0.677, VAR(12)=    207.783,
VAR(13)=      0.928, VAR(14)=       1.339, VAR(15)=      0.689,
VAR(16)=      0.152

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.0216, VAR( 1, 3)=-0.4985,
VAR( 1, 4)=-0.5004, VAR( 1, 5)= 0.1696, VAR( 1, 6)=-0.6555,
VAR( 1, 7)= 0.2756, VAR( 1, 8)=-0.0674, VAR( 1, 9)=-0.1139,
VAR( 1,10)=-0.0888, VAR( 1,11)=-0.0050, VAR( 1,12)=-0.2963,
VAR( 1,13)= 0.2319, VAR( 1,14)= 0.0642, VAR( 1,15)=-0.2769,
VAR( 1,16)=-0.6523
VAR( 2, 2)= 1.0000, VAR( 2, 3)= 0.0511, VAR( 2, 4)=-0.0485,
VAR( 2, 5)= 0.1049, VAR( 2, 6)=-0.0738, VAR( 2, 7)=-0.0836,
VAR( 2, 8)= 0.0681, VAR( 2, 9)=-0.2046, VAR( 2,10)=-0.2133,
VAR( 2,11)=-0.1287, VAR( 2,12)=-0.0545, VAR( 2,13)=-0.0130,
VAR( 2,14)=-0.2047, VAR( 2,15)=-0.0659, VAR( 2,16)= 0.0374
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.1793, VAR( 3, 5)= 0.3476,
VAR( 3, 6)=-0.0986, VAR( 3, 7)=-0.3609, VAR( 3, 8)= 0.3292,
VAR( 3, 9)= 0.1530, VAR( 3,10)=-0.1688, VAR( 3,11)=-0.2119,
VAR( 3,12)= 0.5419, VAR( 3,13)=-0.4863, VAR( 3,14)=-0.0462,
VAR( 3,15)= 0.5555, VAR( 3,16)= 0.1763
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.6983, VAR( 4, 6)= 0.7870,
VAR( 4, 7)=-0.2582, VAR( 4, 8)= 0.0050, VAR( 4, 9)=-0.2014,
VAR( 4,10)= 0.5135, VAR( 4,11)= 0.5145, VAR( 4,12)= 0.2462,
VAR( 4,13)=-0.2985, VAR( 4,14)=-0.3208, VAR( 4,15)= 0.2137,
VAR( 4,16)= 0.2635
VAR( 5, 5)= 1.0000, VAR( 5, 6)=-0.7625, VAR( 5, 7)=-0.1146,
VAR( 5, 8)= 0.1604, VAR( 5, 9)= 0.1837, VAR( 5,10)=-0.5612,
VAR( 5,11)=-0.5875, VAR( 5,12)=-0.2523, VAR( 5,13)=-0.0695,
VAR( 5,14)= 0.1005, VAR( 5,15)=-0.3962, VAR( 5,16)=-0.3590
VAR( 6, 6)= 1.0000, VAR( 6, 7)= 0.0421, VAR( 6, 8)=-0.2041,
VAR( 6, 9)=-0.0626, VAR( 6,10)= 0.5027, VAR( 6,11)= 0.4441,
VAR( 6,12)= 0.3221, VAR( 6,13)= 0.0578, VAR( 6,14)=-0.0437,
VAR( 6,15)= 0.4225, VAR( 6,16)= 0.6116
```

```
VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.3038, VAR( 7, 9)= 0.1079,
VAR( 7,10)= 0.2653, VAR( 7,11)= 0.2839, VAR( 7,12)=-0.1609,
VAR( 7,13)= 0.5540, VAR( 7,14)= 0.6376, VAR( 7,15)=-0.0612,
VAR( 7,16)= 0.1106
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.1173, VAR( 8,10)=-0.0209,
VAR( 8,11)= 0.0239, VAR( 8,12)= 0.1952, VAR( 8,13)=-0.4932,
VAR( 8,14)=-0.0667, VAR( 8,15)= 0.0656, VAR( 8,16)=-0.1660
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.0683, VAR( 9,11)=-0.0315,
VAR( 9,12)=-0.0602, VAR( 9,13)= 0.1788, VAR( 9,14)= 0.8225,
VAR( 9,15)=-0.0350, VAR( 9,16)= 0.1418
VAR(10,10)= 1.0000, VAR(10,11)= 0.8704, VAR(10,12)= 0.3395,
VAR(10,13)=-0.0697, VAR(10,14)= 0.1822, VAR(10,15)= 0.3755,
VAR(10,16)= 0.0921
VAR(11,11)= 1.0000, VAR(11,12)= 0.3157, VAR(11,13)=-0.1105,
VAR(11,14)= 0.1195, VAR(11,15)= 0.3451, VAR(11,16)= 0.0212
VAR(12,12)= 1.0000, VAR(12,13)=-0.4721, VAR(12,14)=-0.1132,
VAR(12,15)= 0.8095, VAR(12,16)=-0.0412
VAR(13,13)= 1.0000, VAR(13,14)= 0.4099, VAR(13,15)=-0.2701,
VAR(13,16)= 0.2591
VAR(14,14)= 1.0000, VAR(14,15)=-0.0396, VAR(14,16)= 0.1588
VAR(15,15)= 1.0000, VAR(15,16)= 0.2424
```

```
STEP NUMBER      1          ENTER VARIABLE  1
STANDARD DEVIATION OF RESIDUALS=              0.115
STD. DEV. AS PERCENT OF RESPONSE MEAN=       29.246
PERCENT VARIATION EXPLAINED R-SQ=            42.546
CORRECTED R-SQ AS A PERCENT=                 42.505
GOODNESS OF FIT OR OVERALL F,F(  1,385)=1025.644
CONSTANT TERM=                           0.35687838

VAR        COEFF                STD DEV          T VALUE
                                 COEFF
  1      -0.10583716            0.00330476     -32.02568010

STEP NUMBER      2          ENTER VARIABLE 13
STANDARD DEVIATION OF RESIDUALS=              0.096
STD. DEV. AS PERCENT OF RESPONSE MEAN=       24.306
PERCENT VARIATION EXPLAINED R-SQ=            60.345
CORRECTED R-SQ AS A PERCENT=                 60.288
GOODNESS OF FIT OR OVERALL F,F(  2,384)=1053.066
CONSTANT TERM=                           0.37761688

VAR        COEFF                STD DEV          T VALUE
                                 COEFF
  1      -0.12215727            0.00282351     -43.26429992
 13       0.07101005            0.00284907      24.92397563

STEP NUMBER      3          ENTER VARIABLE  5
STANDARD DEVIATION OF RESIDUALS=              0.091
STD. DEV. AS PERCENT OF RESPONSE MEAN=       22.984
PERCENT VARIATION EXPLAINED R-SQ=            64.568
CORRECTED R-SQ AS A PERCENT=                 64.491
GOODNESS OF FIT OR OVERALL F,F(  3,383)= 840.073
CONSTANT TERM=                           0.41010091

VAR        COEFF                STD DEV          T VALUE
                                 COEFF
  1      -0.11547508            0.00272019     -42.45109764
  5      -0.03949997            0.00307686     -12.83773537
 13       0.06705675            0.00271163      24.72928987

STEP NUMBER      4          ENTER VARIABLE  4
STANDARD DEVIATION OF RESIDUALS=              0.084
STD. DEV. AS PERCENT OF RESPONSE MEAN=       21.437
PERCENT VARIATION EXPLAINED R-SQ=            69.200
CORRECTED R-SQ AS A PERCENT=                 69.111
GOODNESS OF FIT OR OVERALL F,F(  4,382)= 776.246
CONSTANT TERM=                           0.79302651

VAR        COEFF                STD DEV          T VALUE
                                 COEFF
```

1	-0.13643401	0.00292408	-46.65872593
4	-0.00660148	0.00045790	-14.41673304
5	-0.08888742	0.00446888	-19.89033374
13	0.04959327	0.00280422	17.68523501

STEP NUMBER 5 ENTER VARIABLE 12
STANDARD DEVIATION OF RESIDUALS= 0.078
STD. DEV. AS PERCENT OF RESPONSE MEAN= 19.735
PERCENT VARIATION EXPLAINED R-SQ= 73.913
CORRECTED R-SQ AS A PERCENT= 73.819
GOODNESS OF FIT OR OVERALL F,F(5,381)= 782.582
CONSTANT TERM= 1.01422725

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.15029589	0.00283144	-53.08115815
4	-0.00887663	0.00044549	-19.92561838
5	-0.11952257	0.00454839	-26.27800456
12	-0.00020413	0.00001292	-15.79666491
13	0.02273256	0.00309134	7.35362142

STEP NUMBER 6 ENTER VARIABLE 15
STANDARD DEVIATION OF RESIDUALS= 0.070
STD. DEV. AS PERCENT OF RESPONSE MEAN= 17.857
PERCENT VARIATION EXPLAINED R-SQ= 78.659
CORRECTED R-SQ AS A PERCENT= 78.566
GOODNESS OF FIT OR OVERALL F,F(6,380)= 847.730
CONSTANT TERM= 1.01784655

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.13915473	0.00263968	-52.71653779
4	-0.00631627	0.00042876	-14.73132747
5	-0.08430297	0.00458029	-18.40557954
12	-0.00042994	0.00001740	-24.70438565
13	0.02471124	0.00279936	8.82746436
15	0.09370888	0.00534949	17.51734220

STEP NUMBER 7 ENTER VARIABLE 7
STANDARD DEVIATION OF RESIDUALS= 0.070
STD. DEV. AS PERCENT OF RESPONSE MEAN= 17.723
PERCENT VARIATION EXPLAINED R-SQ= 78.992
CORRECTED R-SQ AS A PERCENT= 78.885
GOODNESS OF FIT OR OVERALL F,F(7,379)= 740.719
CONSTANT TERM= 0.97279288

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.14013692	0.00262839	-53.31669336
4	-0.00592982	0.00043352	-13.67820731

5	-0.07993675	0.00464111	-17.22361867
7	0.01429655	0.00305922	4.67326222
12	-0.00043903	0.00001738	-25.25675769
13	0.01907936	0.00302856	6.29981347
15	0.09542833	0.00532229	17.92995446

STEP NUMBER 8 ENTER VARIABLE 2
STANDARD DEVIATION OF RESIDUALS= 0.069
STD. DEV. AS PERCENT OF RESPONSE MEAN= 17.624
PERCENT VARIATION EXPLAINED R-SQ= 79.241
CORRECTED R-SQ AS A PERCENT= 79.121
GOODNESS OF FIT OR OVERALL F,F(8,378)= 657.521
CONSTANT TERM= 0.97222478

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.13981254	0.00261488	-53.46800551
2	0.00250690	0.00061574	4.07132779
4	-0.00591237	0.00043112	-13.71407154
5	-0.08064233	0.00461837	-17.46119338
7	0.01518056	0.00304983	4.97751240
12	-0.00043784	0.00001729	-25.32681768
13	0.01886846	0.00301204	6.26433568
15	0.09560165	0.00529265	18.06309255

STEP NUMBER 9 ENTER VARIABLE 11
STANDARD DEVIATION OF RESIDUALS= 0.069
STD. DEV. AS PERCENT OF RESPONSE MEAN= 17.604
PERCENT VARIATION EXPLAINED R-SQ= 79.304
CORRECTED R-SQ AS A PERCENT= 79.169
GOODNESS OF FIT OR OVERALL F,F(9,377)= 586.278
CONSTANT TERM= 0.95910951

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.13778262	0.00279407	-49.31254125
2	0.00244455	0.00061579	3.96977922
4	-0.00547658	0.00048045	-11.39892294
5	-0.08094639	0.00461544	-17.53816071
7	0.01889366	0.00354622	5.32783458
11	-0.00899115	0.00439591	-2.04534493
12	-0.00043577	0.00001730	-25.19272899
13	0.01777590	0.00305562	5.81743587
15	0.09737206	0.00535694	18.17680117

```
COST/HOME/WEEK, UNION, % 1 WAY ITEMS, VEH SIZE, HOMES SERVED
INCENTIVE, TOTAL PAID TIME. 1 WAY & HOMES ALSO X**2 & 1/X.

AVERAGES
VAR( 1)=     -0.351, VAR( 2)=      54.120, VAR( 3)=       0.019,
VAR( 4)=   3012.213, VAR( 5)=       0.800, VAR( 6)=     433.208,
VAR( 7)=      0.003, VAR( 8)=     851.702, VAR( 9)=      -0.373,
VAR(10)=     -0.725, VAR(11)=       0.394

STANDARD DEVIATIONS
VAR( 1)=      0.937, VAR( 2)=       9.129, VAR( 3)=       0.003,
VAR( 4)=   1081.512, VAR( 5)=       0.807, VAR( 6)=     207.783,
VAR( 7)=      0.001, VAR( 8)=    5513.988, VAR( 9)=       0.928,
VAR(10)=      0.689, VAR(11)=       0.152

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.5004, VAR( 1, 3)= 0.5318,
VAR( 1, 4)=-0.4825, VAR( 1, 5)= 0.1696, VAR( 1, 6)=-0.2963,
VAR( 1, 7)= 0.3585, VAR( 1, 8)= 0.0658, VAR( 1, 9)= 0.2319,
VAR( 1,10)=-0.2769, VAR( 1,11)=-0.6523
VAR( 2, 2)= 1.0000, VAR( 2, 3)=-0.9935, VAR( 2, 4)= 0.9985,
VAR( 2, 5)=-0.6983, VAR( 2, 6)= 0.2462, VAR( 2, 7)=-0.2969,
VAR( 2, 8)=-0.0660, VAR( 2, 9)=-0.2985, VAR( 2,10)= 0.2137,
VAR( 2,11)= 0.2635
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.9858, VAR( 3, 5)= 0.7395,
VAR( 3, 6)=-0.2978, VAR( 3, 7)= 0.3259, VAR( 3, 8)= 0.0619,
VAR( 3, 9)= 0.2710, VAR( 3,10)=-0.2897, VAR( 3,11)=-0.3190
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.6752, VAR( 4, 6)= 0.2179,
VAR( 4, 7)=-0.2798, VAR( 4, 8)=-0.0675, VAR( 4, 9)=-0.3090,
VAR( 4,10)= 0.1733, VAR( 4,11)= 0.2358
VAR( 5, 5)= 1.0000, VAR( 5, 6)=-0.2523, VAR( 5, 7)= 0.0812,
VAR( 5, 8)=-0.1179, VAR( 5, 9)=-0.0695, VAR( 5,10)=-0.3962,
VAR( 5,11)=-0.3590
VAR( 6, 6)= 1.0000, VAR( 6, 7)=-0.8438, VAR( 6, 8)=-0.1815,
VAR( 6, 9)=-0.4721, VAR( 6,10)= 0.8095, VAR( 6,11)=-0.0412
VAR( 7, 7)= 1.0000, VAR( 7, 8)= 0.4134, VAR( 7, 9)= 0.6881,
VAR( 7,10)=-0.6106, VAR( 7,11)= 0.2486
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.2222, VAR( 8,10)=-0.0617,
VAR( 8,11)= 0.3042
VAR( 9, 9)= 1.0000, VAR( 9,10)=-0.2701, VAR( 9,11)= 0.2591
VAR(10,10)= 1.0000, VAR(10,11)= 0.2424
```

```
STEP NUMBER    1          ENTER VARIABLE  1
STANDARD DEVIATION OF RESIDUALS=             0.115
STD. DEV. AS PERCENT OF RESPONSE MEAN=      29.246
PERCENT VARIATION EXPLAINED R-SQ=           42.546
CORRECTED R-SQ AS A PERCENT=                42.505
GOODNESS OF FIT OR OVERALL F,F(  1,385)=1025.644
CONSTANT TERM=                          0.35687838

VAR        COEFF               STD DEV           T VALUE
                               COEFF
 1       -0.10583716           0.00330476     -32.02568010

STEP NUMBER    2          ENTER VARIABLE  7
STANDARD DEVIATION OF RESIDUALS=             0.084
STD. DEV. AS PERCENT OF RESPONSE MEAN=      21.403
PERCENT VARIATION EXPLAINED R-SQ=           69.252
CORRECTED R-SQ AS A PERCENT=                69.208
GOODNESS OF FIT OR OVERALL F,F(  2,384)=1558.584
CONSTANT TERM=                          0.11755765

VAR        COEFF               STD DEV           T VALUE
                               COEFF
 1       -0.13803401           0.00259065     -53.28168280
 7       84.03912083           2.42390115      34.67101823

STEP NUMBER    3          ENTER VARIABLE 10
STANDARD DEVIATION OF RESIDUALS=             0.052
STD. DEV. AS PERCENT OF RESPONSE MEAN=      13.193
PERCENT VARIATION EXPLAINED R-SQ=           88.325
CORRECTED R-SQ AS A PERCENT=                88.299
GOODNESS OF FIT OR OVERALL F,F(  3,383)=3487.458
CONSTANT TERM=                          0.07433535

VAR        COEFF               STD DEV           T VALUE
                               COEFF
 1       -0.13205345           0.00160192     -82.43460550
 7      133.30848891           1.81853608      73.30538560
10        0.12194007           0.00256550      47.53069079

STEP NUMBER    4          ENTER VARIABLE  5
STANDARD DEVIATION OF RESIDUALS=             0.050
STD. DEV. AS PERCENT OF RESPONSE MEAN=      12.809
PERCENT VARIATION EXPLAINED R-SQ=           89.003
CORRECTED R-SQ AS A PERCENT=                88.971
GOODNESS OF FIT OR OVERALL F,F(  4,382)=2796.185
CONSTANT TERM=                          0.09218759

VAR        COEFF               STD DEV           T VALUE
                               COEFF
```

1	-0.13017041	0.00156858	-82.98613561
5	-0.01745828	0.00189115	-9.23158925
7	129.16694412	1.82167665	70.90552783
10	0.11087516	0.00276417	40.11162168

STEP NUMBER 5 ENTER VARIABLE 4
STANDARD DEVIATION OF RESIDUALS= 0.047
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.992
PERCENT VARIATION EXPLAINED R-SQ= 90.368
CORRECTED R-SQ AS A PERCENT= 90.333
GOODNESS OF FIT OR OVERALL F,F(5,381)=2591.206
CONSTANT TERM= 0.22184581

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.14229599	0.00170529	-83.44406922
4	-0.00003042	0.00000217	-13.98870346
5	-0.04864355	0.00284687	-17.08666085
7	117.02758681	1.91358809	61.15610130
10	0.08934651	0.00301093	29.67405336

STEP NUMBER 6 ENTER VARIABLE 3
STANDARD DEVIATION OF RESIDUALS= 0.044
STD. DEV. AS PERCENT OF RESPONSE MEAN= 11.201
PERCENT VARIATION EXPLAINED R-SQ= 91.603
CORRECTED R-SQ AS A PERCENT= 91.567
GOODNESS OF FIT OR OVERALL F,F(6,380)=2509.161
CONSTANT TERM= 2.17101561

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.12387147	0.00205143	-60.38312935
3	-78.40113976	5.50156902	-14.25068731
4	-0.00019859	0.00001197	-16.58429298
5	-0.01424609	0.00359114	-3.96701646
7	119.57376174	1.79619246	66.57068449
10	0.06984588	0.00312745	22.33313938

STEP NUMBER 7 ENTER VARIABLE 9
STANDARD DEVIATION OF RESIDUALS= 0.039
STD. DEV. AS PERCENT OF RESPONSE MEAN= 9.779
PERCENT VARIATION EXPLAINED R-SQ= 93.604
CORRECTED R-SQ AS A PERCENT= 93.572
GOODNESS OF FIT OR OVERALL F,F(7,379)=2883.287
CONSTANT TERM= 3.57905806

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.11753539	0.00181679	-64.69407133
3	-135.52834623	5.53474551	-24.48682525

4	-0.00033951	0.00001246	-27.24220291
5	-0.01059404	0.00314017	-3.37371392
7	145.68581898	2.00980107	72.48768096
9	-0.04161766	0.00200348	-20.77266447
10	0.05439796	0.00282989	19.22264017

STEP NUMBER 8 ENTER VARIABLE 6
STANDARD DEVIATION OF RESIDUALS= 0.038
STD. DEV. AS PERCENT OF RESPONSE MEAN= 9.609
PERCENT VARIATION EXPLAINED R-SQ= 93.830
CORRECTED R-SQ AS A PERCENT= 93.794
GOODNESS OF FIT OR OVERALL F,F(8,378)=2619.284
CONSTANT TERM= 3.67537672

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.11652232	0.00179089	-65.06387162
3	-142.93268871	5.53783260	-25.81022200
4	-0.00035506	0.00001244	-28.53996285
5	-0.00638499	0.00314214	-2.03205116
6	0.00009297	0.00001311	7.08959517
7	159.16971976	2.74177154	58.05360426
9	-0.04418336	0.00200162	-22.07385262
10	0.04076160	0.00338107	12.05581187

```
MAN MINUTE PER TON, ALL VARIABLES.
F LEVEL TO ENTER EQUALS F LEVEL TO DELETE =3.000.

AVERAGES
VAR( 1)=    -0.351, VAR( 2)=     -0.642, VAR( 3)=     -0.318,
VAR( 4)=    54.120, VAR( 5)=      0.800, VAR( 6)=     -0.056,
VAR( 7)=     1.636, VAR( 8)=      9.580, VAR( 9)=      4.461,
VAR(10)=    10.035, VAR(11)=      1.740, VAR(12)=    433.208,
VAR(13)=    -0.373, VAR(14)=      6.357, VAR(15)=     -0.725,
VAR(16)=    55.193

STANDARD DEVIATIONS
VAR( 1)=     0.937, VAR( 2)=      3.060, VAR( 3)=      0.948,
VAR( 4)=     9.129, VAR( 5)=      0.807, VAR( 6)=      0.999,
VAR( 7)=     0.779, VAR( 8)=      5.719, VAR( 9)=      1.020,
VAR(10)=     4.139, VAR(11)=      0.677, VAR(12)=    207.783,
VAR(13)=     0.928, VAR(14)=      1.339, VAR(15)=      0.689,
VAR(16)=    33.640

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.0216, VAR( 1, 3)=-0.4985,
VAR( 1, 4)=-0.5004, VAR( 1, 5)= 0.1696, VAR( 1, 6)=-0.6555,
VAR( 1, 7)= 0.2756, VAR( 1, 8)=-0.0674, VAR( 1, 9)=-0.1139,
VAR( 1,10)=-0.0888, VAR( 1,11)=-0.0050, VAR( 1,12)=-0.2963,
VAR( 1,13)= 0.2319, VAR( 1,14)= 0.0642, VAR( 1,15)=-0.2769,
VAR( 1,16)=-0.5416
VAR( 2, 2)= 1.0000, VAR( 2, 3)= 0.0511, VAR( 2, 4)=-0.0485,
VAR( 2, 5)= 0.1049, VAR( 2, 6)=-0.0738, VAR( 2, 7)=-0.0836,
VAR( 2, 8)= 0.0681, VAR( 2, 9)=-0.2046, VAR( 2,10)=-0.2133,
VAR( 2,11)=-0.1287, VAR( 2,12)=-0.0545, VAR( 2,13)=-0.0130,
VAR( 2,14)=-0.2047, VAR( 2,15)=-0.0659, VAR( 2,16)= 0.0126
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.1793, VAR( 3, 5)= 0.3476,
VAR( 3, 6)=-0.0986, VAR( 3, 7)=-0.3609, VAR( 3, 8)= 0.3292,
VAR( 3, 9)= 0.1530, VAR( 3,10)=-0.1688, VAR( 3,11)=-0.2119,
VAR( 3,12)= 0.5419, VAR( 3,13)=-0.4863, VAR( 3,14)=-0.0462,
VAR( 3,15)= 0.5555, VAR( 3,16)= 0.0243
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.6983, VAR( 4, 6)= 0.7870,
VAR( 4, 7)=-0.2582, VAR( 4, 8)= 0.0050, VAR( 4, 9)=-0.2014,
VAR( 4,10)= 0.5135, VAR( 4,11)= 0.5145, VAR( 4,12)= 0.2462,
VAR( 4,13)=-0.2985, VAR( 4,14)=-0.3208, VAR( 4,15)= 0.2137,
VAR( 4,16)= 0.1842
VAR( 5, 5)= 1.0000, VAR( 5, 6)=-0.7625, VAR( 5, 7)=-0.1146,
VAR( 5, 8)= 0.1604, VAR( 5, 9)= 0.1837, VAR( 5,10)=-0.5612,
VAR( 5,11)=-0.5875, VAR( 5,12)=-0.2523, VAR( 5,13)=-0.0695,
VAR( 5,14)= 0.1005, VAR( 5,15)=-0.3962, VAR( 5,16)=-0.2074
VAR( 6, 6)= 1.0000, VAR( 6, 7)= 0.0421, VAR( 6, 8)=-0.2041,
VAR( 6, 9)=-0.0626, VAR( 6,10)= 0.5027, VAR( 6,11)= 0.4441,
VAR( 6,12)= 0.3221, VAR( 6,13)= 0.0578, VAR( 6,14)=-0.0437,
VAR( 6,15)= 0.4225, VAR( 6,16)= 0.5159
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```
VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.3038, VAR( 7, 9)= 0.1079,
VAR( 7,10)= 0.2653, VAR( 7,11)= 0.2839, VAR( 7,12)=-0.1609,
VAR( 7,13)= 0.5540, VAR( 7,14)= 0.6376, VAR( 7,15)=-0.0612,
VAR( 7,16)=-0.0513
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.1173, VAR( 8,10)=-0.0209,
VAR( 8,11)= 0.0239, VAR( 8,12)= 0.1952, VAR( 8,13)=-0.4932,
VAR( 8,14)=-0.0667, VAR( 8,15)= 0.0656, VAR( 8,16)=-0.1848
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.0683, VAR( 9,11)=-0.0315,
VAR( 9,12)=-0.0602, VAR( 9,13)= 0.1788, VAR( 9,14)= 0.8225,
VAR( 9,15)=-0.0350, VAR( 9,16)= 0.3156
VAR(10,10)= 1.0000, VAR(10,11)= 0.8704, VAR(10,12)= 0.3395,
VAR(10,13)=-0.0697, VAR(10,14)= 0.1822, VAR(10,15)= 0.3755,
VAR(10,16)=-0.2667
VAR(11,11)= 1.0000, VAR(11,12)= 0.3157, VAR(11,13)=-0.1105,
VAR(11,14)= 0.1195, VAR(11,15)= 0.3451, VAR(11,16)=-0.2737
VAR(12,12)= 1.0000, VAR(12,13)=-0.4721, VAR(12,14)=-0.1132,
VAR(12,15)= 0.8095, VAR(12,16)=-0.0315
VAR(13,13)= 1.0000, VAR(13,14)= 0.4099, VAR(13,15)=-0.2701,
VAR(13,16)= 0.2748
VAR(14,14)= 1.0000, VAR(14,15)=-0.0396, VAR(14,16)= 0.2092
VAR(15,15)= 1.0000, VAR(15,16)= 0.0450
```

```
STEP NUMBER     1            ENTER VARIABLE  1
STANDARD DEVIATION OF RESIDUALS=            28.289
STD. DEV. AS PERCENT OF RESPONSE MEAN=      51.254
PERCENT VARIATION EXPLAINED R-SQ=           29.336
CORRECTED R-SQ AS A PERCENT=                29.285
GOODNESS OF FIT OR OVERALL F,F(  1,385)= 574.984
CONSTANT TERM=                         48.36309997

VAR         COEFF                STD DEV           T VALUE
                                  COEFF
 1       -19.45234296             0.81122960       -23.97883763

STEP NUMBER     2            ENTER VARIABLE 13
STANDARD DEVIATION OF RESIDUALS=            24.674
STD. DEV. AS PERCENT OF RESPONSE MEAN=      44.705
PERCENT VARIATION EXPLAINED R-SQ=           46.280
CORRECTED R-SQ AS A PERCENT=                46.202
GOODNESS OF FIT OR OVERALL F,F(  2,384)= 596.161
CONSTANT TERM=                         52.84178761

VAR         COEFF                STD DEV           T VALUE
                                  COEFF
 1       -22.97683283             0.72740162       -31.58754704
 13       15.33533136             0.73398495        20.89325044

STEP NUMBER     3            ENTER VARIABLE 10
STANDARD DEVIATION OF RESIDUALS=            22.588
STD. DEV. AS PERCENT OF RESPONSE MEAN=      40.925
PERCENT VARIATION EXPLAINED R-SQ=           55.013
CORRECTED R-SQ AS A PERCENT=                54.915
GOODNESS OF FIT OR OVERALL F,F(  3,383)= 563.736
CONSTANT TERM=                         76.57844208

VAR         COEFF                STD DEV           T VALUE
                                  COEFF
 1       -23.79559378             0.66777049       -35.63438954
 10       -2.41469060             0.14737332       -16.38485559
 13       14.77679638             0.67278901        21.96349267

STEP NUMBER     4            ENTER VARIABLE  6
STANDARD DEVIATION OF RESIDUALS=            18.848
STD. DEV. AS PERCENT OF RESPONSE MEAN=      34.149
PERCENT VARIATION EXPLAINED R-SQ=           68.698
CORRECTED R-SQ AS A PERCENT=                68.608
GOODNESS OF FIT OR OVERALL F,F(  4,382)= 758.267
CONSTANT TERM=                        105.99275954

VAR         COEFF                STD DEV           T VALUE
                                  COEFF
```

1	-7.87366460	0.85443372	-9.21506770
6	22.23051451	0.90438535	24.58079907
10	-4.88394951	0.15878920	-30.75744157
13	8.90087832	0.61017934	14.58731519

STEP NUMBER 5 ENTER VARIABLE 9
STANDARD DEVIATION OF RESIDUALS= 14.143
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.625
PERCENT VARIATION EXPLAINED R-SQ= 82.387
CORRECTED R-SQ AS A PERCENT= 82.323
GOODNESS OF FIT OR OVERALL F,F(5,381)=1291.966
CONSTANT TERM= 59.43410150

VAR	COEFF	STD DEV COEFF	T VALUE
1	1.34986562	0.70024763	1.92769752
6	31.79553067	0.73877933	43.03792668
9	13.71159563	0.41852516	32.76169943
10	-6.18141436	0.12556305	-49.22956580
13	3.04865081	0.49148399	6.20295038

STEP NUMBER 6 ENTER VARIABLE 4
STANDARD DEVIATION OF RESIDUALS= 13.864
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.118
PERCENT VARIATION EXPLAINED R-SQ= 83.090
CORRECTED R-SQ AS A PERCENT= 83.016
GOODNESS OF FIT OR OVERALL F,F(6,380)=1130.111
CONSTANT TERM= 94.56283562

VAR	COEFF	STD DEV COEFF	T VALUE
1	2.30527271	0.69788996	3.30320372
4	-0.63934371	0.08443760	-7.57178923
6	36.87784906	0.98738907	37.34885277
9	13.32007258	0.41348765	32.21395536
10	-6.08419146	0.12374588	-49.16681924
13	0.73913102	0.57019682	1.29627350

STEP NUMBER 7 DELETE VARIABLE 13
STANDARD DEVIATION OF RESIDUALS= 13.867
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.124
PERCENT VARIATION EXPLAINED R-SQ= 83.069
CORRECTED R-SQ AS A PERCENT= 83.008
GOODNESS OF FIT OR OVERALL F,F(5,381)=1355.129
CONSTANT TERM= 97.50659517

VAR	COEFF	STD DEV COEFF	T VALUE
1	2.78046350	0.59400473	4.68087768
4	-0.69789425	0.07135850	-9.78011391

6	37.72309793	0.74163670	50.86465934
9	13.44751671	0.40172815	33.47417087
10	-6.12457730	0.11978921	-51.12795648

STEP NUMBER 8 ENTER VARIABLE 3
STANDARD DEVIATION OF RESIDUALS= 13.592
STD. DEV. AS PERCENT OF RESPONSE MEAN= 24.626
PERCENT VARIATION EXPLAINED R-SQ= 83.746
CORRECTED R-SQ AS A PERCENT= 83.676
GOODNESS OF FIT OR OVERALL F,F(6,380)=1185.077
CONSTANT TERM= 102.42095889

VAR	COEFF	STD DEV COEFF	T VALUE
1	-2.66232827	0.92412284	-2.88092466
3	-4.79151675	0.63178488	-7.58409532
4	-0.87122073	0.07358081	-11.84032488
6	34.52405339	0.84043036	41.07901742
9	12.96894867	0.39877583	32.52190259
10	-5.82675396	0.12380376	-47.06443430

STEP NUMBER 9 ENTER VARIABLE 7
STANDARD DEVIATION OF RESIDUALS= 13.476
STD. DEV. AS PERCENT OF RESPONSE MEAN= 24.416
PERCENT VARIATION EXPLAINED R-SQ= 84.034
CORRECTED R-SQ AS A PERCENT= 83.953
GOODNESS OF FIT OR OVERALL F,F(7,379)=1036.888
CONSTANT TERM= 121.70184702

VAR	COEFF	STD DEV COEFF	T VALUE
1	-2.95539442	0.91812233	-3.21895494
3	-6.10463695	0.67952214	-8.98372045
4	-1.17743495	0.09536802	-12.34622364
6	35.91456744	0.87870454	40.87217673
7	-3.44189285	0.69041544	-4.98524893
9	12.86045123	0.39597209	32.47817639
10	-5.53163680	0.13627677	-40.59119392

STEP NUMBER 10 ENTER VARIABLE 14
STANDARD DEVIATION OF RESIDUALS= 13.426
STD. DEV. AS PERCENT OF RESPONSE MEAN= 24.325
PERCENT VARIATION EXPLAINED R-SQ= 84.164
CORRECTED R-SQ AS A PERCENT= 84.072
GOODNESS OF FIT OR OVERALL F,F(8,378)= 915.485
CONSTANT TERM= 119.67640128

VAR	COEFF	STD DEV COEFF	T VALUE
1	-3.22799842	0.91828489	-3.51524725

3	-6.69536359	0.69938178	-9.57325995
4	-1.19091378	0.09509742	-12.52309288
6	35.89702104	0.87544918	41.00411755
7	-10.44043401	2.19052964	-4.76616879
9	5.85259274	2.11953814	2.76125852
10	-5.49060377	0.13631596	-40.27851091
14	7.04246851	2.09278660	3.36511544

STEP NUMBER 11 ENTER VARIABLE 13
STANDARD DEVIATION OF RESIDUALS= 13.402
STD. DEV. AS PERCENT OF RESPONSE MEAN= 24.281
PERCENT VARIATION EXPLAINED R-SQ= 84.232
CORRECTED R-SQ AS A PERCENT= 84.129
GOODNESS OF FIT OR OVERALL F,F(9,377)= 817.317
CONSTANT TERM= 126.94536904

VAR	COEFF	STD DEV COEFF	T VALUE
1	-3.34108837	0.91783562	-3.64018164
3	-7.63455641	0.79798666	-9.56727327
4	-1.34726616	0.11467972	-11.74807720
6	37.02856038	0.99021629	37.39441648
7	-8.71527923	2.29900416	-3.79089320
9	7.54437139	2.22737818	3.38710842
10	-5.54228571	0.13772610	-40.24136237
13	-1.73928076	0.71575609	-2.42999085
14	5.53524843	2.17920653	2.54002929

```
MAN MINUTE/TON, UNION, FREQ COLL, % 1 WAY ITEMS, CREW SIZE,
COLL TIME, WT/DAY. ITEMS, COLL TIME & WT/DAY ALSO X**2 & 1/X.

AVERAGES
VAR( 1)=     -0.351, VAR( 2)=     -0.318, VAR( 3)=     54.120,
VAR( 4)=      0.019, VAR( 5)=   3012.213, VAR( 6)=     -0.056,
VAR( 7)=      4.461, VAR( 8)=      0.237, VAR( 9)=     20.941,
VAR(10)=     10.035, VAR(11)=      0.120, VAR(12)=    117.824,
VAR(13)=     55.193

STANDARD DEVIATIONS
VAR( 1)=      0.937, VAR( 2)=      0.948, VAR( 3)=      9.129,
VAR( 4)=      0.003, VAR( 5)=   1081.512, VAR( 6)=      0.999,
VAR( 7)=      1.020, VAR( 8)=      0.062, VAR( 9)=      9.478,
VAR(10)=      4.139, VAR(11)=      0.058, VAR(12)=     98.921,
VAR(13)=     33.640

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.4985, VAR( 1, 3)=-0.5004,
VAR( 1, 4)= 0.5318, VAR( 1, 5)=-0.4825, VAR( 1, 6)=-0.6555,
VAR( 1, 7)=-0.1139, VAR( 1, 8)= 0.0852, VAR( 1, 9)=-0.1209,
VAR( 1,10)=-0.0888, VAR( 1,11)=-0.0858, VAR( 1,12)=-0.1487,
VAR( 1,13)=-0.5416
VAR( 2, 2)= 1.0000, VAR( 2, 3)=-0.1793, VAR( 2, 4)= 0.1554,
VAR( 2, 5)=-0.1927, VAR( 2, 6)=-0.0986, VAR( 2, 7)= 0.1530,
VAR( 2, 8)=-0.1159, VAR( 2, 9)= 0.1668, VAR( 2,10)=-0.1688,
VAR( 2,11)= 0.3391, VAR( 2,12)=-0.0760, VAR( 2,13)= 0.0243
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.9935, VAR( 3, 5)= 0.9985,
VAR( 3, 6)= 0.7870, VAR( 3, 7)=-0.2014, VAR( 3, 8)= 0.2039,
VAR( 3, 9)=-0.1886, VAR( 3,10)= 0.5135, VAR( 3,11)=-0.4510,
VAR( 3,12)= 0.4726, VAR( 3,13)= 0.1842
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.9858, VAR( 4, 6)=-0.8462,
VAR( 4, 7)= 0.1917, VAR( 4, 8)=-0.1969, VAR( 4, 9)= 0.1786,
VAR( 4,10)=-0.5397, VAR( 4,11)= 0.4755, VAR( 4,12)=-0.4966,
VAR( 4,13)=-0.2313
VAR( 5, 5)= 1.0000, VAR( 5, 6)= 0.7551, VAR( 5, 7)=-0.2052,
VAR( 5, 8)= 0.2063, VAR( 5, 9)=-0.1927, VAR( 5,10)= 0.4981,
VAR( 5,11)=-0.4371, VAR( 5,12)= 0.4583, VAR( 5,13)= 0.1617
VAR( 6, 6)= 1.0000, VAR( 6, 7)=-0.0626, VAR( 6, 8)= 0.0740,
VAR( 6, 9)=-0.0571, VAR( 6,10)= 0.5027, VAR( 6,11)=-0.4428,
VAR( 6,12)= 0.4642, VAR( 6,13)= 0.5159
VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.9281, VAR( 7, 9)= 0.9872,
VAR( 7,10)= 0.0683, VAR( 7,11)=-0.0517, VAR( 7,12)= 0.0903,
VAR( 7,13)= 0.3156
VAR( 8, 8)= 1.0000, VAR( 8, 9)=-0.8639, VAR( 8,10)=-0.0746,
VAR( 8,11)= 0.0440, VAR( 8,12)=-0.0936, VAR( 8,13)=-0.2867
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.0657, VAR( 9,11)=-0.0542,
VAR( 9,12)= 0.0887, VAR( 9,13)= 0.3084
VAR(10,10)= 1.0000, VAR(10,11)=-0.8651, VAR(10,12)= 0.9608,
VAR(10,13)=-0.2667
```

VAR(11,11)= 1.0000, VAR(11,12)=-0.7222, VAR(11,13)= 0.3112
VAR(12,12)= 1.0000, VAR(12,13)=-0.2153

```
STEP NUMBER     1           ENTER VARIABLE  1
STANDARD DEVIATION OF RESIDUALS=           28.289
STD. DEV. AS PERCENT OF RESPONSE MEAN=     51.254
PERCENT VARIATION EXPLAINED R-SQ=          29.336
CORRECTED R-SQ AS A PERCENT=               29.285
GOODNESS OF FIT OR OVERALL F,F(  1,385)= 574.984
CONSTANT TERM=                        48.36309997

VAR        COEFF              STD DEV           T VALUE
                              COEFF
  1      -19.45234296         0.81122960      -23.97883763

STEP NUMBER     2           ENTER VARIABLE 10
STANDARD DEVIATION OF RESIDUALS=           26.223
STD. DEV. AS PERCENT OF RESPONSE MEAN=     47.512
PERCENT VARIATION EXPLAINED R-SQ=          39.321
CORRECTED R-SQ AS A PERCENT=               39.233
GOODNESS OF FIT OR OVERALL F,F(  2,384)= 448.429
CONSTANT TERM=                        73.88610999

VAR        COEFF              STD DEV           T VALUE
                              COEFF
  1      -20.46379839         0.75498618      -27.10486472
 10       -2.57869261         0.17087482      -15.09112148

STEP NUMBER     3           ENTER VARIABLE  6
STANDARD DEVIATION OF RESIDUALS=           20.240
STD. DEV. AS PERCENT OF RESPONSE MEAN=     36.671
PERCENT VARIATION EXPLAINED R-SQ=          63.878
CORRECTED R-SQ AS A PERCENT=               63.800
GOODNESS OF FIT OR OVERALL F,F(  3,383)= 815.247
CONSTANT TERM=                       111.45841271

VAR        COEFF              STD DEV           T VALUE
                              COEFF
  1       -2.47309166         0.82692242       -2.99071786
  6       27.39885504         0.89353881       30.66330710
 10       -5.54164979         0.16349641      -33.89462751

STEP NUMBER     4           ENTER VARIABLE  7
STANDARD DEVIATION OF RESIDUALS=           14.334
STD. DEV. AS PERCENT OF RESPONSE MEAN=     25.971
PERCENT VARIATION EXPLAINED R-SQ=          81.896
CORRECTED R-SQ AS A PERCENT=               81.844
GOODNESS OF FIT OR OVERALL F,F(  4,382)=1562.955
CONSTANT TERM=                        57.85496737

VAR        COEFF              STD DEV           T VALUE
                              COEFF
```

1	3.58998510	0.60801861	5.90440006
6	33.99011422	0.65728919	51.71257169
7	14.65514643	0.39515495	37.08708780
10	-6.46621063	0.11844175	-54.59401613

STEP NUMBER 5 ENTER VARIABLE 11
STANDARD DEVIATION OF RESIDUALS= 12.004
STD. DEV. AS PERCENT OF RESPONSE MEAN= 21.750
PERCENT VARIATION EXPLAINED R-SQ= 87.312
CORRECTED R-SQ AS A PERCENT= 87.266
GOODNESS OF FIT OR OVERALL F,F(5,381)=1900.674
CONSTANT TERM= -13.49941798

VAR	COEFF	STD DEV COEFF	T VALUE
1	10.63045807	0.58597922	18.14135659
6	39.72594754	0.59901484	66.31880325
7	15.77165796	0.33411034	47.20493786
10	-3.28499975	0.16433841	-19.98923927
11	309.45306984	12.74572150	24.27897626

STEP NUMBER 6 ENTER VARIABLE 4
STANDARD DEVIATION OF RESIDUALS= 11.586
STD. DEV. AS PERCENT OF RESPONSE MEAN= 20.991
PERCENT VARIATION EXPLAINED R-SQ= 88.190
CORRECTED R-SQ AS A PERCENT= 88.139
GOODNESS OF FIT OR OVERALL F,F(6,380)=1717.552
CONSTANT TERM= -54.16399226

VAR	COEFF	STD DEV COEFF	T VALUE
1	9.74364521	0.57227556	17.02614231
4	2362.06748864	233.16827737	10.13031239
6	43.87808484	0.70867472	61.91569118
7	14.62547153	0.34173077	42.79822845
10	-3.06621078	0.16007004	-19.15543206
11	299.23891956	12.34240722	24.24477771

STEP NUMBER 7 ENTER VARIABLE 2
STANDARD DEVIATION OF RESIDUALS= 11.288
STD. DEV. AS PERCENT OF RESPONSE MEAN= 20.451
PERCENT VARIATION EXPLAINED R-SQ= 88.798
CORRECTED R-SQ AS A PERCENT= 88.741
GOODNESS OF FIT OR OVERALL F,F(7,379)=1561.607
CONSTANT TERM= -67.93464814

VAR	COEFF	STD DEV COEFF	T VALUE
1	4.79506854	0.79890300	6.00206603
2	-4.44344328	0.51376003	-8.64886908

4	2841.76713427	233.84545786	12.15232983
6	40.97025059	0.76795928	53.34950934
7	14.24169714	0.33588760	42.40018734
10	-2.78248449	0.15936704	-17.45959814
11	301.22956650	12.02724564	25.04559859

STEP NUMBER 8 ENTER VARIABLE 12
STANDARD DEVIATION OF RESIDUALS= 11.091
STD. DEV. AS PERCENT OF RESPONSE MEAN= 20.094
PERCENT VARIATION EXPLAINED R-SQ= 89.193
CORRECTED R-SQ AS A PERCENT= 89.131
GOODNESS OF FIT OR OVERALL F,F(8,378)=1421.671
CONSTANT TERM= -28.49877732

VAR	COEFF	STD DEV COEFF	T VALUE
1	5.05858334	0.78583980	6.43716864
2	-4.30303483	0.50518262	-8.51778084
4	2757.21006489	230.07350621	11.98403984
6	41.23010624	0.75544617	54.57715978
7	14.05869471	0.33103159	42.46934430
10	-6.83658774	0.59206031	-11.54711379
11	209.57294666	17.50113494	11.97482034
12	0.12601614	0.01774806	7.10027622

STEP NUMBER 9 ENTER VARIABLE 9
STANDARD DEVIATION OF RESIDUALS= 11.066
STD. DEV. AS PERCENT OF RESPONSE MEAN= 20.050
PERCENT VARIATION EXPLAINED R-SQ= 89.249
CORRECTED R-SQ AS A PERCENT= 89.178
GOODNESS OF FIT OR OVERALL F,F(9,377)=1270.063
CONSTANT TERM= -35.11643084

VAR	COEFF	STD DEV COEFF	T VALUE
1	5.19267851	0.78573291	6.60870694
2	-4.10657549	0.50945635	-8.06070129
4	2681.44138899	231.32898665	11.59146300
6	41.22853233	0.75378700	54.69520198
7	19.01307236	1.89184501	10.05001584
9	-0.53831133	0.20239868	-2.65965827
10	-7.08980516	0.59838237	-11.84828542
11	202.30432739	17.67524949	11.44562782
12	0.13237409	0.01786969	7.40774226

```
MAN MINUTE PER HOME, ALL VARIABLES.
F LEVEL TO ENTER EQUALS F LEVEL TO DELETE =3.000.

AVERAGES
VAR( 1)=     -0.351, VAR( 2)=      -0.642, VAR( 3)=     -0.318,
VAR( 4)=     54.120, VAR( 5)=       0.800, VAR( 6)=     -0.056,
VAR( 7)=      1.636, VAR( 8)=       9.580, VAR( 9)=      4.461,
VAR(10)=     10.035, VAR(11)=       1.740, VAR(12)=    433.208,
VAR(13)=     -0.373, VAR(14)=       6.357, VAR(15)=     -0.725,
VAR(16)=      1.344

STANDARD DEVIATIONS
VAR( 1)=      0.937, VAR( 2)=       3.060, VAR( 3)=      0.948,
VAR( 4)=      9.129, VAR( 5)=       0.807, VAR( 6)=      0.999,
VAR( 7)=      0.779, VAR( 8)=       5.719, VAR( 9)=      1.020,
VAR(10)=      4.139, VAR(11)=       0.677, VAR(12)=    207.783,
VAR(13)=      0.928, VAR(14)=       1.339, VAR(15)=      0.689,
VAR(16)=      0.953

SIMPLE CORRELATION COEFFICIENTS
VAR( 1, 1)= 1.0000, VAR( 1, 2)=-0.0216, VAR( 1, 3)=-0.4985,
VAR( 1, 4)=-0.5004, VAR( 1, 5)= 0.1696, VAR( 1, 6)=-0.6555,
VAR( 1, 7)= 0.2756, VAR( 1, 8)=-0.0674, VAR( 1, 9)=-0.1139,
VAR( 1,10)=-0.0888, VAR( 1,11)=-0.0050, VAR( 1,12)=-0.2963,
VAR( 1,13)= 0.2319, VAR( 1,14)= 0.0642, VAR( 1,15)=-0.2769,
VAR( 1,16)=-0.3656
VAR( 2, 2)= 1.0000, VAR( 2, 3)= 0.0511, VAR( 2, 4)=-0.0485,
VAR( 2, 5)= 0.1049, VAR( 2, 6)=-0.0738, VAR( 2, 7)=-0.0836,
VAR( 2, 8)= 0.0681, VAR( 2, 9)=-0.2046, VAR( 2,10)=-0.2133,
VAR( 2,11)=-0.1287, VAR( 2,12)=-0.0545, VAR( 2,13)=-0.0130,
VAR( 2,14)=-0.2047, VAR( 2,15)=-0.0659, VAR( 2,16)=-0.0579
VAR( 3, 3)= 1.0000, VAR( 3, 4)=-0.1793, VAR( 3, 5)= 0.3476,
VAR( 3, 6)=-0.0986, VAR( 3, 7)=-0.3609, VAR( 3, 8)= 0.3292,
VAR( 3, 9)= 0.1530, VAR( 3,10)=-0.1688, VAR( 3,11)=-0.2119,
VAR( 3,12)= 0.5419, VAR( 3,13)=-0.4863, VAR( 3,14)=-0.0462,
VAR( 3,15)= 0.5555, VAR( 3,16)=-0.3988
VAR( 4, 4)= 1.0000, VAR( 4, 5)=-0.6983, VAR( 4, 6)= 0.7870,
VAR( 4, 7)=-0.2582, VAR( 4, 8)= 0.0050, VAR( 4, 9)=-0.2014,
VAR( 4,10)= 0.5135, VAR( 4,11)= 0.5145, VAR( 4,12)= 0.2462,
VAR( 4,13)=-0.2985, VAR( 4,14)=-0.3208, VAR( 4,15)= 0.2137,
VAR( 4,16)= 0.3036
VAR( 5, 5)= 1.0000, VAR( 5, 6)=-0.7625, VAR( 5, 7)=-0.1146,
VAR( 5, 8)= 0.1604, VAR( 5, 9)= 0.1837, VAR( 5,10)=-0.5612,
VAR( 5,11)=-0.5875, VAR( 5,12)=-0.2523, VAR( 5,13)=-0.0695,
VAR( 5,14)= 0.1005, VAR( 5,15)=-0.3962, VAR( 5,16)=-0.4607
VAR( 6, 6)= 1.0000, VAR( 6, 7)= 0.0421, VAR( 6, 8)=-0.2041,
VAR( 6, 9)=-0.0626, VAR( 6,10)= 0.5027, VAR( 6,11)= 0.4441,
VAR( 6,12)= 0.3221, VAR( 6,13)= 0.0578, VAR( 6,14)=-0.0437,
VAR( 6,15)= 0.4225, VAR( 6,16)= 0.6046
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VAR( 7, 7)= 1.0000, VAR( 7, 8)=-0.3038, VAR( 7, 9)= 0.1079,
VAR( 7,10)= 0.2653, VAR( 7,11)= 0.2839, VAR( 7,12)=-0.1609,
VAR( 7,13)= 0.5540, VAR( 7,14)= 0.6376, VAR( 7,15)=-0.0612,
VAR( 7,16)= 0.2723
VAR( 8, 8)= 1.0000, VAR( 8, 9)= 0.1173, VAR( 8,10)=-0.0209,
VAR( 8,11)= 0.0239, VAR( 8,12)= 0.1952, VAR( 8,13)=-0.4932,
VAR( 8,14)=-0.0667, VAR( 8,15)= 0.0656, VAR( 8,16)=-0.2985
VAR( 9, 9)= 1.0000, VAR( 9,10)= 0.0683, VAR( 9,11)=-0.0315,
VAR( 9,12)=-0.0602, VAR( 9,13)= 0.1788, VAR( 9,14)= 0.8225,
VAR( 9,15)=-0.0350, VAR( 9,16)= 0.3050
VAR(10,10)= 1.0000, VAR(10,11)= 0.8704, VAR(10,12)= 0.3395,
VAR(10,13)=-0.0697, VAR(10,14)= 0.1822, VAR(10,15)= 0.3755,
VAR(10,16)= 0.1676
VAR(11,11)= 1.0000, VAR(11,12)= 0.3157, VAR(11,13)=-0.1105,
VAR(11,14)= 0.1195, VAR(11,15)= 0.3451, VAR(11,16)= 0.1031
VAR(12,12)= 1.0000, VAR(12,13)=-0.4721, VAR(12,14)=-0.1132,
VAR(12,15)= 0.8095, VAR(12,16)=-0.3314
VAR(13,13)= 1.0000, VAR(13,14)= 0.4099, VAR(13,15)=-0.2701,
VAR(13,16)= 0.5280
VAR(14,14)= 1.0000, VAR(14,15)=-0.0396, VAR(14,16)= 0.3517
VAR(15,15)= 1.0000, VAR(15,16)=-0.1694
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STEP NUMBER     1             ENTER VARIABLE  6
STANDARD DEVIATION OF RESIDUALS=               0.759
STD. DEV. AS PERCENT OF RESPONSE MEAN=        56.470
PERCENT VARIATION EXPLAINED R-SQ=             36.559
CORRECTED R-SQ AS A PERCENT=                  36.513
GOODNESS OF FIT OR OVERALL F,F(  1,385)= 798.124
CONSTANT TERM=                            1.37626925

VAR       COEFF                STD DEV           T VALUE
                                COEFF
 6       0.57672114            0.02041412       28.25108447

STEP NUMBER     2             ENTER VARIABLE 12
STANDARD DEVIATION OF RESIDUALS=               0.544
STD. DEV. AS PERCENT OF RESPONSE MEAN=        40.465
PERCENT VARIATION EXPLAINED R-SQ=             67.447
CORRECTED R-SQ AS A PERCENT=                  67.400
GOODNESS OF FIT OR OVERALL F,F(  2,384)=1433.768
CONSTANT TERM=                            2.55235506

VAR       COEFF                STD DEV           T VALUE
                                COEFF
 6       0.75708455            0.01545192       48.99613464
12      -0.00269172            0.00007428      -36.23846831

STEP NUMBER     3             ENTER VARIABLE 14
STANDARD DEVIATION OF RESIDUALS=               0.449
STD. DEV. AS PERCENT OF RESPONSE MEAN=        33.418
PERCENT VARIATION EXPLAINED R-SQ=             77.815
CORRECTED R-SQ AS A PERCENT=                  77.767
GOODNESS OF FIT OR OVERALL F,F(  3,383)=1616.989
CONSTANT TERM=                            1.01599140

VAR       COEFF                STD DEV           T VALUE
                                COEFF
 6       0.75958607            0.01276104       59.52381755
12      -0.00252737            0.00006168      -40.97515129
14       0.23051144            0.00906697       25.42319935

STEP NUMBER     4             ENTER VARIABLE  4
STANDARD DEVIATION OF RESIDUALS=               0.428
STD. DEV. AS PERCENT OF RESPONSE MEAN=        31.830
PERCENT VARIATION EXPLAINED R-SQ=             79.887
CORRECTED R-SQ AS A PERCENT=                  79.829
GOODNESS OF FIT OR OVERALL F,F(  4,382)=1372.281
CONSTANT TERM=                            2.88716321

VAR       COEFF                STD DEV           T VALUE
                                COEFF
```

4	-0.02756121	0.00231001	-11.93118675
6	0.95788325	0.02059054	46.52054070
12	-0.00257615	0.00005889	-43.74259756
14	0.17585616	0.00977605	17.98847559

STEP NUMBER 5 ENTER VARIABLE 9
STANDARD DEVIATION OF RESIDUALS= 0.406
STD. DEV. AS PERCENT OF RESPONSE MEAN= 30.197
PERCENT VARIATION EXPLAINED R-SQ= 81.911
CORRECTED R-SQ AS A PERCENT= 81.846
GOODNESS OF FIT OR OVERALL F,F(5,381)=1250.734
CONSTANT TERM= 3.32804975

VAR	COEFF	STD DEV COEFF	T VALUE
4	-0.03534640	0.00227917	-15.50847413
6	1.02425398	0.02025012	50.58013678
9	0.24390843	0.01961824	12.43273825
12	-0.00264580	0.00005615	-47.11936284
14	0.00693832	0.01645013	0.42177876

STEP NUMBER 6 DELETE VARIABLE 14
STANDARD DEVIATION OF RESIDUALS= 0.406
STD. DEV. AS PERCENT OF RESPONSE MEAN= 30.188
PERCENT VARIATION EXPLAINED R-SQ= 81.909
CORRECTED R-SQ AS A PERCENT= 81.857
GOODNESS OF FIT OR OVERALL F,F(4,382)=1564.303
CONSTANT TERM= 3.36845242

VAR	COEFF	STD DEV COEFF	T VALUE
4	-0.03580872	0.00199769	-17.92508832
6	1.02785181	0.01836038	55.98205452
9	0.25074257	0.01105715	22.67695394
12	-0.00264941	0.00005548	-47.75599350

STEP NUMBER 7 ENTER VARIABLE 15
STANDARD DEVIATION OF RESIDUALS= 0.383
STD. DEV. AS PERCENT OF RESPONSE MEAN= 28.521
PERCENT VARIATION EXPLAINED R-SQ= 83.863
CORRECTED R-SQ AS A PERCENT= 83.805
GOODNESS OF FIT OR OVERALL F,F(5,381)=1435.394
CONSTANT TERM= 3.20528748

VAR	COEFF	STD DEV COEFF	T VALUE
4	-0.04427780	0.00199782	-22.16309783
6	1.13402404	0.01919188	59.08874019
9	0.24445837	0.01045807	23.37508405
12	-0.00174567	0.00008736	-19.98239483

15	-0.36425268	0.02816893	-12.93100920

STEP NUMBER 8 ENTER VARIABLE 5
STANDARD DEVIATION OF RESIDUALS= 0.349
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.947
PERCENT VARIATION EXPLAINED R-SQ= 86.654
CORRECTED R-SQ AS A PERCENT= 86.596
GOODNESS OF FIT OR OVERALL F,F(6,380)=1493.381
CONSTANT TERM= 3.63034163

VAR	COEFF	STD DEV COEFF	T VALUE
4	-0.05375165	0.00190113	-28.27352975
5	-0.33292413	0.01959691	-16.98859956
6	1.01558347	0.01880017	54.01990473
9	0.26934333	0.00962627	27.98003553
12	-0.00142196	0.00008173	-17.39869665
15	-0.49713014	0.02679356	-18.55409129

STEP NUMBER 9 ENTER VARIABLE 1
STANDARD DEVIATION OF RESIDUALS= 0.343
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.503
PERCENT VARIATION EXPLAINED R-SQ= 87.116
CORRECTED R-SQ AS A PERCENT= 87.051
GOODNESS OF FIT OR OVERALL F,F(7,379)=1332.061
CONSTANT TERM= 3.89000098

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.12999753	0.01848381	-7.03304959
4	-0.05670600	0.00191524	-29.60784498
5	-0.45740339	0.02615857	-17.48579369
6	0.88489646	0.02620572	33.76730081
9	0.25980857	0.00955820	27.18175713
12	-0.00146156	0.00008053	-18.15002397
15	-0.50629331	0.02636733	-19.20153837

STEP NUMBER 10 ENTER VARIABLE 2
STANDARD DEVIATION OF RESIDUALS= 0.341
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.361
PERCENT VARIATION EXPLAINED R-SQ= 87.268
CORRECTED R-SQ AS A PERCENT= 87.194
GOODNESS OF FIT OR OVERALL F,F(8,378)=1180.678
CONSTANT TERM= 3.84132938

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.12295443	0.01846285	-6.65955982
2	0.01262226	0.00311109	4.05717656
4	-0.05646954	0.00190548	-29.63533270

5	-0.45984085	0.02602009	-17.67253013
6	0.88876415	0.02607747	34.08168332
9	0.26944980	0.00979761	27.50158111
12	-0.00144919	0.00008014	-18.08383590
15	-0.50663958	0.02622089	-19.32198101

STEP NUMBER 11 ENTER VARIABLE 14
STANDARD DEVIATION OF RESIDUALS= 0.340
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.277
PERCENT VARIATION EXPLAINED R-SQ= 87.363
CORRECTED R-SQ AS A PERCENT= 87.280
GOODNESS OF FIT OR OVERALL F,F(9,377)=1057.685
CONSTANT TERM= 4.10971089

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.10203306	0.01952591	-5.22552002
2	0.01218231	0.00310373	3.92504895
4	-0.05994236	0.00218679	-27.41106802
5	-0.45919923	0.02593387	-17.70654177
6	0.92977072	0.02897211	32.09191971
9	0.32042727	0.01867164	17.16117283
12	-0.00143756	0.00007995	-17.98034916
14	-0.04910842	0.01533121	-3.20316795
15	-0.51784000	0.02636612	-19.64035462

STEP NUMBER 12 ENTER VARIABLE 13
STANDARD DEVIATION OF RESIDUALS= 0.339
STD. DEV. AS PERCENT OF RESPONSE MEAN= 25.212
PERCENT VARIATION EXPLAINED R-SQ= 87.436
CORRECTED R-SQ AS A PERCENT= 87.345
GOODNESS OF FIT OR OVERALL F,F(10,376)= 957.625
CONSTANT TERM= 3.84950061

VAR	COEFF	STD DEV COEFF	T VALUE
1	-0.12721104	0.02139351	-5.94624546
2	0.01157598	0.00310311	3.73044853
4	-0.05501003	0.00278662	-19.74076122
5	-0.46093497	0.02587458	-17.81420264
6	0.86496542	0.03680082	23.50397195
9	0.31651639	0.01867446	16.94915492
12	-0.00135653	0.00008468	-16.01886087
13	0.05197961	0.01827665	2.84404569
14	-0.05008732	0.01529577	-3.27458663
15	-0.50373148	0.02676230	-18.82242645

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